

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

**FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

TETRAPHASE PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

20-5276217
(I.R.S. Employer
Identification Number)

480 Arsenal Way
Watertown, MA 02472
(617) 715-3600

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

Maria Stahl
Senior Vice President and General Counsel
480 Arsenal Way
Watertown, MA 02472
(617) 715-3600

(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent for Service)

Copy to:

Stuart M. Falber, Esq.
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
(617) 526-6663
(617) 526-5000

Approximate date of commencement of proposed sale to the public: From time to time after this registration statement becomes effective.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer
Non-accelerated filer Smaller reporting company
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered(1)	Amount to be Registered(1)	Proposed Maximum Offering Price Per Unit(1)	Maximum Aggregate Offering Price(1)	Amount of Registration Fee(1)
Debt Securities				
Common Stock, par value \$0.001 per share				
Preferred Stock, par value \$0.001 per share				
Warrants				
Total			\$150,000,000.00	\$18,675.00(2)

(1) Pursuant to Form S-3 General Instruction II.D information is not required to be included. An indeterminate amount of the securities of each identified class is being registered as may from time to time be offered hereunder at indeterminate prices, along with an indeterminate number of securities that may be issued upon exercise, settlement, exchange or conversion of securities offered or sold hereunder or that are represented by depositary shares as shall have aggregate initial offering price not to exceed \$100,000,000. Pursuant to Rule 416 under the Securities Act of 1933, as amended, or the Securities Act, this registration statement also covers any additional securities that may be offered or issued in connection with any stock split, stock dividend or pursuant to anti-dilution provisions of any of the securities. Separate consideration may or may not be received for securities that are issuable upon conversion, exercise or exchange of other securities. In addition, the total amount to be registered and the proposed maximum aggregate offering price are estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act.

- (2) Pursuant to Rule 415(a)(6) under the Securities Act, the securities registered pursuant to this registration statement include \$34,304,500 of unsold securities previously registered on the registrant's registration statement on Form S-3 (File No. 333-218816) filed on June 26, 2017 and declared effective on July 5, 2017 (the "Prior Registration Statement"). The Prior Registration Statement registered securities for a proposed maximum aggregate offering price of \$100,000,000, of which \$34,304,500 remain unsold. The associated filing fee of \$3,975.89 for the securities remaining under the Prior Registration Statement is hereby used to offset the current registration fee due, resulting in an additional registration fee in the amount of \$14,699.11 due in connection with the filing of this registration statement. Pursuant to Rule 415(a)(6), the offering of securities registered under the Prior Registration Statement will be deemed terminated as of the date of effectiveness of this registration statement.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission acting pursuant to said Section 8(a), may determine.

[Table of Contents](#)

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and we are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to completion, dated January 25, 2018

PROSPECTUS

\$150,000,000

TETRAPHASE PHARMACEUTICALS, INC.

**Debt Securities
Common Stock
Preferred Stock
Warrants**

We may offer and sell securities from time to time in one or more offerings of up to \$150,000,000 in aggregate offering price. This prospectus describes the general terms of these securities and the general manner in which these securities will be offered. We will provide the specific terms of these securities in supplements to this prospectus. The prospectus supplements will also describe the specific manner in which these securities will be offered and may also supplement, update or amend information contained in this document. You should read this prospectus and any applicable prospectus supplement before you invest.

We may offer these securities in amounts, at prices and on terms determined at the time of offering. The securities may be sold directly to you, through agents, or through underwriters and dealers. If agents, underwriters or dealers are used to sell the securities, we will name them and describe their compensation in a prospectus supplement.

Our common stock is listed on The NASDAQ Global Select Market under the symbol "TTPH."

Investing in these securities involves certain risks. See "[Risk Factors](#)" included in any accompanying prospectus supplement and in the documents incorporated by reference in this prospectus for a discussion of the factors you should carefully consider before deciding to purchase these securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2018

TABLE OF CONTENTS

	Page
ABOUT THIS PROSPECTUS	1
RISK FACTORS	1
WHERE YOU CAN FIND MORE INFORMATION	1
INCORPORATION BY REFERENCE	3
FORWARD-LOOKING STATEMENTS	4
TETRAPHASE PHARMACEUTICALS, INC.	5
CONSOLIDATED RATIOS OF EARNINGS TO FIXED CHARGES	7
USE OF PROCEEDS	8
DESCRIPTION OF DEBT SECURITIES	8
DESCRIPTION OF CAPITAL STOCK	17
DESCRIPTION OF WARRANTS	21
FORMS OF SECURITIES	22
PLAN OF DISTRIBUTION	24
LEGAL MATTERS	27
EXPERTS	27

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, which we refer to as the “SEC,” utilizing a “shelf” registration process. Under this shelf registration process, we may from time to time sell any combination of the securities described in this prospectus in one or more offerings for an aggregate initial offering price of up to \$150,000,000.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide one or more prospectus supplements that will contain specific information about the terms of the offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and the accompanying prospectus supplement together with the additional information described under the heading “Where You Can Find More Information” beginning on page 1 of this prospectus.

You should rely only on the information contained in or incorporated by reference in this prospectus, any accompanying prospectus supplement or in any related free writing prospectus filed by us with the SEC. We have not authorized anyone to provide you with different information. This prospectus and any accompanying prospectus supplement do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the securities described in this prospectus or such accompanying prospectus supplement or an offer to sell or the solicitation of an offer to buy such securities in any circumstances in which such offer or solicitation is unlawful. You should assume that the information appearing in this prospectus, any prospectus supplement, the documents incorporated by reference and any related free writing prospectus is accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed materially since those dates.

Unless the context otherwise indicates, references in this prospectus to “we,” “our” and “us” refer, collectively, to Tetrphase Pharmaceuticals, Inc., a Delaware corporation, and its consolidated subsidiaries.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the risks and uncertainties described in this prospectus and any accompanying prospectus supplement, including the risk factors set forth in our filings with the SEC that are incorporated by reference herein, including the risk factors in our Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2017, before making an investment decision pursuant to this prospectus and any accompanying prospectus supplement relating to a specific offering.

Our business, financial condition and results of operations could be materially and adversely affected by any or all of these risks or by additional risks and uncertainties not presently known to us or that we currently deem immaterial that may adversely affect us in the future.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC’s website at <http://www.sec.gov>. Copies of certain information filed by us with the SEC are also available on our website at www.tphase.com. Our website is not a part of this prospectus and is not incorporated by reference in this prospectus. You may also read and copy any document we file at the SEC’s Public Reference Room, 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room.

[Table of Contents](#)

This prospectus is part of a registration statement we filed with the SEC. This prospectus omits some information contained in the registration statement in accordance with SEC rules and regulations. You should review the information and exhibits in the registration statement for further information about us and our consolidated subsidiaries and the securities we are offering. Statements in this prospectus concerning any document we filed as an exhibit to the registration statement or that we otherwise filed with the SEC are not intended to be comprehensive and are qualified by reference to these filings. You should review the complete document to evaluate these statements. You can obtain a copy of the registration statement from the SEC at the address listed above or the SEC's website.

INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference much of the information we file with the SEC, which means that we can disclose important information to you by referring you to those publicly available documents. The information that we incorporate by reference in this prospectus is considered to be part of this prospectus. Because we are incorporating by reference future filings with the SEC, this prospectus is continually updated and those future filings may modify or supersede some of the information included or incorporated in this prospectus. This means that you must look at all of the SEC filings that we incorporate by reference to determine if any of the statements in this prospectus or in any document previously incorporated by reference have been modified or superseded.

This prospectus incorporates by reference the documents listed below (File No. 000-35837) and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act (in each case, other than those documents or the portions of those documents not deemed to be filed) between the date of the initial registration statement and the effectiveness of the registration statement and following the effectiveness of the registration statement until the offering of the securities under the registration statement is terminated or completed:

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, including the information specifically incorporated by reference into the Annual Report on Form 10-K from our definitive Proxy Statement on Schedule 14A filed in connection with our 2017 annual meeting of stockholders;
- Our Quarterly Reports on Form 10-Q for the fiscal quarters ended March 31, 2017, June 30, 2017 and September 30, 2017;
- Our Current Reports on Form 8-K filed with the SEC on each of January 17, 2017, February 3, 2017, April 3, 2017, June 2, 2017, June 20, 2017, July 7, 2017, July 25, 2017, July 28, 2017, October 20, 2017, December 4, 2017, January 5, 2018 and January 23, 2018;
- The description of our common stock contained in our Registration Statement on Form 8-A filed with the SEC on March 15, 2013, including any amendments or reports filed for the purpose of updating such description.

You may request a copy of these filings, at no cost, by writing or telephoning us at the following address or phone number:

Tetraphase Pharmaceuticals, Inc.
480 Arsenal Way
Watertown, MA 02472
Attn: Investor Relations
(617) 715-3600

FORWARD-LOOKING STATEMENTS

This prospectus and the information incorporated by reference in this prospectus include forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. Such forward-looking statements include statements about our plans and strategy for our business, the possible achievement of discovery and development goals and milestones, our future discovery and development efforts, our collaborations, our future operating results and financial position, and other objectives for future operations. We often use words such as “anticipate,” “believe,” “estimate,” “expect,” “intend,” “may,” “plan,” “predict,” “project,” “seek,” “target,” “goal,” “potential,” “will,” “would,” “could,” “should,” “continue,” and other words and terms of similar meaning to help identify forward-looking statements, although not all forward-looking statements contain these identifying words. You also can identify them by the fact that they do not relate strictly to historical or current facts. There are a number of important risks and uncertainties that could cause actual results or events to differ materially from those indicated by forward-looking statements. These risks and uncertainties include those inherent in pharmaceutical research and development, such as adverse results in our drug discovery and clinical development activities, decisions made by the U.S. Food and Drug Administration and other regulatory authorities with respect to the development and commercialization of our product candidates, our ability to obtain, maintain and enforce intellectual property rights for our drug candidates, competition, our ability to obtain any necessary financing to conduct our planned activities, and other risk factors that are referenced in the section of any accompanying prospectus supplement entitled “Risk Factors.” You should also carefully review the risk factors and cautionary statements described in the other documents we file from time to time with the SEC, specifically our most recent Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K. We undertake no obligation to revise or update any forward-looking statements except to the extent required by law.

TETRAPHASE PHARMACEUTICALS, INC.

Our Business

We are a clinical-stage biopharmaceutical company using our proprietary chemistry technology to create novel antibiotics for serious and life-threatening multidrug-resistant infections. We are developing our lead product candidate, eravacycline, a fully-synthetic fluorocycline, as an intravenous, or IV, and oral antibiotic for use as a first-line empiric monotherapy for the treatment of multidrug-resistant infections, including multidrug-resistant, or MDR, Gram-negative infections.

We are conducting a global phase 3 clinical program for eravacycline called IGNITE (**I**nvestigating **G**ram-**N**egative **I**nfections **T**reated with **E**ravacycline). We are also pursuing the discovery and development of additional antibiotics that target unmet medical needs, including multidrug-resistant Gram-negative bacteria.

On July 25, 2017, we announced top-line data from our IGNITE4 trial, a global phase 3 randomized, double-blind, double-dummy, multicenter, prospective study assessing the efficacy, safety and pharmacokinetics of twice-daily IV eravacycline (1.0 mg/kg every 12 hours) compared with meropenem (1g every 8 hours) for the treatment of complicated intra-abdominal infections, or cIAI, that we conducted in 500 patients. In the trial, eravacycline met the primary endpoint of statistical non-inferiority of clinical response at the test-of-cure, or TOC, visit, under the guidance set by the United States Food and Drug Administration, or FDA, and the European Medicines Agency, or EMA. Prior to IGNITE 4, we conducted IGNITE1, a phase 3 clinical trial of twice daily IV eravacycline (1.0 mg/kg every 12 hours) compared with ertapenem (1.0g IV every 24 hours) for the treatment of cIAI. In IGNITE1, eravacycline met the primary endpoint of statistical non-inferiority of clinical response.

In January 2018, we announced the submission of a new drug application, or NDA, for eravacycline for the treatment of cIAI with the FDA based on the positive results observed in both IGNITE1 and IGNITE4. In the third quarter of 2017 we submitted a marketing authorization application, or MAA, to the EMA for IV eravacycline for the treatment of cIAI primarily based upon the results of IGNITE1.

We are also developing eravacycline for the treatment of complicated urinary tract infections, or cUTI. In January 2017, we initiated IGNITE3, a randomized, multi-center, double-blind, phase 3 clinical trial evaluating the efficacy and safety of once-daily IV eravacycline compared to ertapenem, the control therapy in this trial, for the treatment of cUTI. We completed enrollment in IGNITE3 in September 2017 and expect to report top-line data from this trial in the first quarter of 2018. If IGNITE3 is successful, we plan to use the results from IGNITE3 to support submission of a supplemental new drug application, or sNDA, for IV eravacycline for the treatment of cUTI, assuming approval first of IV eravacycline for the treatment of cIAI.

In parallel with the clinical trials using IV eravacycline, we are continuing our development program for an oral formulation of eravacycline. We have identified an optimized IV-to-oral dosing regimen using the current oral formulation which we plan to advance into a phase 2 clinical trial in patients with cUTI.

The FDA has granted Qualified Infectious Disease Product (QIDP) and Fast Track designations for IV and oral eravacycline for cIAI and cUTI.

In June 2017, we announced positive results from a phase 1 single-ascending dose clinical trial of the IV formulation of TP-271, a fully-synthetic fluorocycline being developed for respiratory disease caused by bacterial biothreat pathogens, in healthy volunteers. We are conducting a multiple-ascending dose trial for the IV formulation of TP-271. We also plan to initiate a multiple-ascending dose phase 1 study for the oral formulation of TP-271 in early 2018. In February 2017, we received Qualified Infectious Disease Product and Fast Track designations from the FDA.

In addition, we are developing TP-6076, a fully-synthetic fluorocycline derivative, as a lead candidate under our second-generation program to target unmet medical needs, including multidrug-resistant Gram-negative

[Table of Contents](#)

bacteria. In June 2017, we announced positive results from a phase 1 randomized, placebo-controlled, double-blind, single-ascending dose study evaluating the safety, tolerability and pharmacokinetics of IV TP-6076. We also are conducting a multiple-ascending study in healthy volunteers of the IV formulation of TP-6076.

We believe that our proprietary chemistry technology, licensed from Harvard University on an exclusive worldwide basis and enhanced by us, represents a significant innovation in the creation of tetracycline drugs that has the potential to reinvigorate the clinical and market potential of the class. Our proprietary chemistry technology makes it possible to create novel tetracycline antibiotics using a practical, fully synthetic process for what we believe is the first time. This fully synthetic process avoids the limitations of bacterially derived tetracyclines and allows us to chemically modify many positions in the tetracycline scaffold, including most of the positions that we believe could not practically be modified by any previous conventional method. Using our proprietary chemistry technology, we can create a wider variety of tetracycline-based compounds than was previously possible, enabling us to pursue novel tetracycline derivatives for the treatment of multidrug-resistant bacteria that are resistant to existing tetracyclines and other classes of antibiotic products. We own exclusive worldwide rights to these compounds and our technology.

Our principal executive offices are located at 480 Arsenal Way, Watertown, Massachusetts 02472 and our telephone number is (617) 715-3600.

CONSOLIDATED RATIOS OF EARNINGS TO FIXED CHARGES

The following table sets forth, for each of the periods presented, our ratio of earnings to fixed charges and the related coverage deficiency. You should read this table in conjunction with the financial statements and notes incorporated by reference in this prospectus.

(In thousands)	Nine Months Ended September 30, 2017	Years Ended December 31,				
		2016	2015	2014	2013	2012
Net loss	\$ (91,276)	\$(77,480)	\$(83,189)	\$(66,742)	\$(29,636)	\$(15,087)
Ratio of earnings to fixed charges(1), (2)	N/A	N/A	N/A	N/A	N/A	N/A
Coverage deficiency	\$ (91,276)	\$(77,480)	\$(83,189)	\$(66,742)	\$(29,636)	\$(15,087)

- (1) For purposes of calculating the ratio of earnings to fixed charges, earnings consist of net income (loss) from continuing operations before income taxes, plus fixed charges. Fixed charges include interest expense and the estimated interest component of rental expense.
- (2) We did not record earnings for the nine months ended September 30, 2017 or for the years ended December 31, 2016, 2015, 2014, 2013 and 2012. Accordingly, our earnings were insufficient to cover fixed charges for such periods and we are unable to disclose a ratio of earnings to fixed charges for such periods.

USE OF PROCEEDS

We intend to use the net proceeds from the sale of any securities offered under this prospectus for general corporate purposes unless otherwise indicated in the applicable prospectus supplement. General corporate purposes may include working capital and capital expenditures, research and development expenses, including clinical trial costs, general and administrative expenses, potential acquisition of, or investment in, companies, technologies, products or assets that complement our business, and repayment and refinancing of debt. We may temporarily invest the net proceeds in investment-grade, interest-bearing securities until they are used for their stated purpose. We have not determined the amount of net proceeds to be used specifically for such purposes. As a result, management will retain broad discretion over the allocation of net proceeds.

DESCRIPTION OF DEBT SECURITIES

We may offer debt securities which may be senior or subordinated. We refer to the senior debt securities and the subordinated debt securities collectively as debt securities. The following description summarizes the general terms and provisions of the debt securities. We will describe the specific terms of the debt securities and the extent, if any, to which the general provisions summarized below apply to any series of debt securities in the prospectus supplement relating to the series and any applicable free writing prospectus that we authorize to be delivered. When we refer to “the Company,” “we,” “our,” and “us” in this section, we mean Tetrphase Pharmaceuticals, Inc., excluding, unless the context otherwise requires or as otherwise expressly stated, our subsidiaries.

We may issue senior debt securities from time to time, in one or more series under a senior indenture to be entered into between us and a senior trustee to be named in a prospectus supplement, which we refer to as the senior trustee. We may issue subordinated debt securities from time to time, in one or more series under a subordinated indenture to be entered into between us and a subordinated trustee to be named in a prospectus supplement, which we refer to as the subordinated trustee. The forms of senior indenture and subordinated indenture are filed as exhibits to the registration statement of which this prospectus forms a part. Together, the senior indenture and the subordinated indenture are referred to as the indentures and, together, the senior trustee and the subordinated trustee are referred to as the trustees. This prospectus briefly outlines some of the provisions of the indentures. The following summary of the material provisions of the indentures is qualified in its entirety by the provisions of the indentures, including definitions of certain terms used in the indentures. Wherever we refer to particular sections or defined terms of the indentures, those sections or defined terms are incorporated by reference in this prospectus or the applicable prospectus supplement. You should review the indentures that are filed as exhibits to the registration statement of which this prospectus forms a part for additional information.

None of the indentures will limit the amount of debt securities that we may issue. The applicable indenture will provide that debt securities may be issued up to an aggregate principal amount authorized from time to time by us and may be payable in any currency or currency unit designated by us or in amounts determined by reference to an index.

General

The senior debt securities will constitute our unsubordinated general obligations and will rank *pari passu* with our other unsubordinated obligations. The subordinated debt securities will constitute our subordinated general obligations and will be junior in right of payment to our senior indebtedness (including senior debt securities), as described under the heading “—Certain Terms of the Subordinated Debt Securities—Subordination.” The debt securities will be structurally subordinated to all existing and future indebtedness and other liabilities of our subsidiaries unless such subsidiaries expressly guarantee such debt securities.

The debt securities will be our unsecured obligations unless otherwise specified in the applicable prospectus supplement. Any secured debt or other secured obligations will be effectively senior to the debt securities to the extent of the value of the assets securing such debt or other obligations.

[Table of Contents](#)

The applicable prospectus supplement and/or free writing prospectus will include any additional or different terms of the debt securities being offered, including the following terms:

- the title and type of the debt securities;
- whether the debt securities will be senior or subordinated debt securities, and, with respect to debt securities issued under the subordinated indenture the terms on which they are subordinated;
- the aggregate principal amount of the debt securities;
- the price or prices at which we will sell the debt securities;
- the maturity date or dates of the debt securities and the right, if any, to extend such date or dates;
- the rate or rates, if any, per year, at which the debt securities will bear interest, or the method of determining such rate or rates;
- the date or dates from which such interest will accrue, the interest payment dates on which such interest will be payable or the manner of determination of such interest payment dates and the related record dates;
- the right, if any, to extend the interest payment periods and the duration of that extension;
- the manner of paying principal and interest and the place or places where principal and interest will be payable;
- provisions for a sinking fund, purchase fund or other analogous fund, if any;
- any redemption dates, prices, obligations and restrictions on the debt securities;
- the currency, currencies or currency units in which the debt securities will be denominated and the currency, currencies or currency units in which principal and interest, if any, on the debt securities may be payable;
- any conversion or exchange features of the debt securities;
- whether and upon what terms the debt securities may be defeased;
- any events of default or covenants in addition to or in lieu of those set forth in the indenture;
- whether the debt securities will be issued in definitive or global form or in definitive form only upon satisfaction of certain conditions;
- whether the debt securities will be guaranteed as to payment or performance;
- whether the debt securities will be secured by any collateral and, if so, a general description of the collateral and the terms and provisions of such collateral, security, pledge or other related agreements;
- any material tax implications of the debt securities; and
- any other material terms of the debt securities.

When we refer to “principal” in this section with reference to the debt securities, we are also referring to “premium, if any.”

We may from time to time, without notice to or the consent of the holders of any series of debt securities, create and issue further debt securities of any such series ranking equally with the debt securities of such series in all respects (or in all respects other than (1) the payment of interest accruing prior to the issue date of such further debt securities or (2) the first payment of interest following the issue date of such further debt securities). Such further debt securities may be consolidated and form a single series with the debt securities of such series and have the same terms as to status, redemption or otherwise as the debt securities of such series.

[Table of Contents](#)

You may present debt securities for exchange and you may present debt securities for transfer in the manner, at the places and subject to the restrictions set forth in the debt securities and the applicable prospectus supplement.

We will provide you those services without charge, although you may have to pay any tax or other governmental charge payable in connection with any exchange or transfer, as set forth in the indenture.

Debt securities may bear interest at a fixed rate or a floating rate. Debt securities bearing no interest or interest at a rate that at the time of issuance is below the prevailing market rate (original issue discount securities) may be sold at a discount below their stated principal amount. U.S. federal income tax considerations applicable to any such discounted debt securities or to certain debt securities issued at par which are treated as having been issued at a discount for U.S. federal income tax purposes will be described in the applicable prospectus supplement.

We may issue debt securities with the principal amount payable on any principal payment date, or the amount of interest payable on any interest payment date, to be determined by reference to one or more currency exchange rates, securities or baskets of securities, commodity prices or indices. You may receive a payment of principal on any principal payment date, or a payment of interest on any interest payment date, that is greater than or less than the amount of principal or interest otherwise payable on such dates, depending on the value on such dates of the applicable currency, security or basket of securities, commodity or index. Information as to the methods for determining the amount of principal or interest payable on any date, the currencies, securities or baskets of securities, commodities or indices to which the amount payable on such date is linked and certain related tax considerations will be set forth in the applicable prospectus supplement.

Certain Terms of the Senior Debt Securities

Covenants. Unless we indicate otherwise in a prospectus supplement, the senior debt securities will not contain any financial or restrictive covenants, including covenants restricting either us or any of our subsidiaries from incurring, issuing, assuming or guaranteeing any indebtedness secured by a lien on any of our or our subsidiaries' property or capital stock, or restricting either us or any of our subsidiaries from entering into sale and leaseback transactions.

Consolidation, Merger and Sale of Assets. Unless we indicate otherwise in a prospectus supplement, we may not consolidate with or merge into any other person, in a transaction in which we are not the surviving corporation, or convey, transfer or lease our properties and assets substantially as an entirety to any person, in either case, unless:

- the successor entity, if any, is a U.S. corporation, limited liability company, partnership or trust (subject to certain exceptions provided for in the senior indenture);
- the successor entity assumes our obligations on the senior debt securities and under the senior indenture;
- immediately after giving effect to the transaction, no default or event of default shall have occurred and be continuing; and
- certain other conditions are met.

No Protection in the Event of a Change in Control. Unless we indicate otherwise in a prospectus supplement with respect to a particular series of senior debt securities, the senior debt securities will not contain any provisions that may afford holders of the senior debt securities protection in the event we have a change in control or in the event of a highly leveraged transaction (whether or not such transaction results in a change in control).

[Table of Contents](#)

Events of Default. Unless we indicate otherwise in a prospectus supplement with respect to a particular series of senior debt securities, the following are events of default under the senior indenture for any series of senior debt securities:

- failure to pay interest on any senior debt securities of such series when due and payable, if that default continues for a period of 90 days (or such other period as may be specified for such series);
- failure to pay principal on the senior debt securities of such series when due and payable whether at maturity, upon redemption, by declaration or otherwise (and, if specified for such series, the continuance of such failure for a specified period);
- default in the performance of or breach of any of our covenants or agreements in the senior indenture applicable to senior debt securities of such series, other than a covenant breach which is specifically dealt with elsewhere in the senior indenture, and that default or breach continues for a period of 90 days after we receive written notice from the trustee or from the holders of 25% or more in aggregate principal amount of the senior debt securities of such series;
- certain events of bankruptcy or insolvency, whether or not voluntary; and
- any other event of default provided for in such series of senior debt securities as may be specified in the applicable prospectus supplement.

The default by us under any other debt, including any other series of debt securities, is not a default under the senior indenture.

If an event of default other than an event of default specified in the fourth bullet point above occurs with respect to a series of senior debt securities and is continuing under the senior indenture, then, and in each such case, either the trustee or the holders of not less than 25% in aggregate principal amount of such series then outstanding under the senior indenture (each such series voting as a separate class) by written notice to us and to the trustee, if such notice is given by the holders, may, and the trustee at the request of such holders shall, declare the principal amount of and accrued interest on such series of senior debt securities to be immediately due and payable, and upon this declaration, the same shall become immediately due and payable.

If an event of default specified in the fourth bullet point above occurs with respect to us and is continuing, the entire principal amount of and accrued interest, if any, on each series of senior debt securities then outstanding shall become immediately due and payable.

Unless otherwise specified in the prospectus supplement relating to a series of senior debt securities originally issued at a discount, the amount due upon acceleration shall include only the original issue price of the senior debt securities, the amount of original issue discount accrued to the date of acceleration and accrued interest, if any.

Upon certain conditions, declarations of acceleration may be rescinded and annulled and past defaults may be waived by the holders of a majority in aggregate principal amount of all the senior debt securities of such series affected by the default, each series voting as a separate class. Furthermore, subject to various provisions in the senior indenture, the holders of a majority in aggregate principal amount of a series of senior debt securities, by notice to the trustee, may waive an existing default or event of default with respect to such senior debt securities and its consequences, except a default in the payment of principal of or interest on such senior debt securities or in respect of a covenant or provision of the senior indenture which cannot be modified or amended without the consent of the holders of each such senior debt security. Upon any such waiver, such default shall cease to exist, and any event of default with respect to such senior debt securities shall be deemed to have been cured, for every purpose of the senior indenture; but no such waiver shall extend to any subsequent or other default or event of default or impair any right consequent thereto.

The holders of a majority in aggregate principal amount of a series of senior debt securities may direct the time, method and place of conducting any proceeding for any remedy available to the trustee or exercising any

[Table of Contents](#)

trust or power conferred on the trustee with respect to such senior debt securities. However, the trustee may refuse to follow any direction that conflicts with law or the senior indenture, that may involve the trustee in personal liability or that the trustee determines in good faith may be unduly prejudicial to the rights of holders of such series of senior debt securities not joining in the giving of such direction and may take any other action it deems proper that is not inconsistent with any such direction received from holders of such series of senior debt securities. A holder may not pursue any remedy with respect to the senior indenture or any series of senior debt securities unless:

- the holder gives the trustee written notice of a continuing event of default;
- the holders of at least 25% in aggregate principal amount of such series of senior debt securities make a written request to the trustee to pursue the remedy in respect of such event of default;
- the requesting holder or holders offer the trustee indemnity satisfactory to the trustee against any costs, liability or expense;
- the trustee does not comply with the request within 60 days after receipt of the request and the offer of indemnity; and
- during such 60-day period, the holders of a majority in aggregate principal amount of such series of senior debt securities do not give the trustee a direction that is inconsistent with the request.

These limitations, however, do not apply to the right of any holder of a senior debt security to receive payment of the principal of and interest, if any, on such senior debt security in accordance with the terms of such debt security, or to bring suit for the enforcement of any such payment in accordance with the terms of such debt security, on or after the due date for the senior debt securities, which right shall not be impaired or affected without the consent of the holder.

The senior indenture requires certain of our officers to certify, on or before a fixed date in each year in which any senior debt security is outstanding, as to their knowledge of our compliance with all covenants, agreements and conditions under the senior indenture.

Satisfaction and Discharge. We can satisfy and discharge our obligations to holders of any series of debt securities if:

- we pay or cause to be paid, as and when due and payable, the principal of and any interest on all senior debt securities of such series outstanding under the senior indenture; or
- all senior debt securities of such series have become due and payable or will become due and payable within one year (or are to be called for redemption within one year) and we deposit in trust a combination of cash and U.S. government or U.S. government agency obligations that will generate enough cash to make interest, principal and any other payments on the debt securities of that series on their various due dates.

Under current U.S. federal income tax law, the deposit and our legal release from the debt securities would be treated as though we took back your debt securities and gave you your share of the cash and debt securities or bonds deposited in trust. In that event, you could recognize gain or loss on the debt securities you give back to us. Purchasers of the debt securities should consult their own advisers with respect to the tax consequences to them of such deposit and discharge, including the applicability and effect of tax laws other than the U.S. federal income tax law.

Defeasance. Unless the applicable prospectus supplement provides otherwise, the following discussion of legal defeasance and discharge and covenant defeasance will apply to any series of debt securities issued under the indentures.

[Table of Contents](#)

Legal Defeasance. We can legally release ourselves from any payment or other obligations on the debt securities of any series (called “legal defeasance”) if certain conditions are met, including the following:

- We deposit in trust for your benefit and the benefit of all other direct holders of the debt securities of the same series a combination of cash and U.S. government or U.S. government agency obligations that will generate enough cash to make interest, principal and any other payments on the debt securities of that series on their various due dates.
- There is a change in current U.S. federal income tax law or an IRS ruling that lets us make the above deposit without causing you to be taxed on the debt securities any differently than if we did not make the deposit and instead repaid the debt securities ourselves when due. Under current U.S. federal income tax law, the deposit and our legal release from the debt securities would be treated as though we took back your debt securities and gave you your share of the cash and debt securities or bonds deposited in trust. In that event, you could recognize gain or loss on the debt securities you give back to us.
- We deliver to the trustee a legal opinion of our counsel confirming the tax law change or ruling described above.

If we accomplish legal defeasance, as described above, you would have to rely solely on the trust deposit for repayment of the debt securities. You could not look to us for repayment in the event of any shortfall.

Covenant Defeasance. Without any change of current U.S. federal tax law, we can make the same type of deposit described above and be released from some of the covenants in the debt securities (called “covenant defeasance”). In that event, you would lose the protection of those covenants but would gain the protection of having money and securities set aside in trust to repay the debt securities. In order to achieve covenant defeasance, we must do the following (among other things):

- We must deposit in trust for your benefit and the benefit of all other direct holders of the debt securities of the same series a combination of cash and U.S. government or U.S. government agency obligations that will generate enough cash to make interest, principal and any other payments on the debt securities of that series on their various due dates.
- We must deliver to the trustee a legal opinion of our counsel confirming that under current U.S. federal income tax law we may make the above deposit without causing you to be taxed on the debt securities any differently than if we did not make the deposit and instead repaid the debt securities ourselves when due.

If we accomplish covenant defeasance, you could still look to us for repayment of the debt securities if there were a shortfall in the trust deposit. In fact, if one of the events of default occurred (such as our bankruptcy) and the debt securities become immediately due and payable, there may be such a shortfall. Depending on the events causing the default, you may not be able to obtain payment of the shortfall.

Modification and Waiver. We and the trustee may amend or supplement the senior indenture or the senior debt securities without the consent of any holder:

- to convey, transfer, assign, mortgage or pledge any assets as security for the senior debt securities of one or more series;
- to evidence the succession of a corporation, limited liability company, partnership or trust to us, and the assumption by such successor of our covenants, agreements and obligations under the senior indenture or to otherwise comply with the covenant relating to mergers, consolidations and sales of assets;
- to comply with the requirements of the SEC in order to effect or maintain the qualification of the senior indenture under the Trust Indenture Act of 1939, as amended, or the Trust Indenture Act;

Table of Contents

- to add to our covenants such new covenants, restrictions, conditions or provisions for the protection of the holders, and to make the occurrence, or the occurrence and continuance, of a default in any such additional covenants, restrictions, conditions or provisions an event of default;
- to cure any ambiguity, defect or inconsistency in the senior indenture or in any supplemental indenture or to conform the senior indenture or the senior debt securities to the description of senior debt securities of such series set forth in this prospectus or any applicable prospectus supplement;
- to provide for or add guarantors with respect to the senior debt securities of any series;
- to establish the form or forms or terms of the senior debt securities as permitted by the senior indenture;
- to evidence and provide for the acceptance of appointment under the senior indenture by a successor trustee, or to make such changes as shall be necessary to provide for or facilitate the administration of the trusts in the senior indenture by more than one trustee;
- to add to, delete from or revise the conditions, limitations and restrictions on the authorized amount, terms, purposes of issue, authentication and delivery of any series of senior debt securities;
- to make any change to the senior debt securities of any series so long as no senior debt securities of such series are outstanding; or
- to make any change that does not adversely affect the rights of any holder in any material respect.

Other amendments and modifications of the senior indenture or the senior debt securities issued may be made, and our compliance with any provision of the senior indenture with respect to any series of senior debt securities may be waived, with the consent of the holders of a majority of the aggregate principal amount of the outstanding senior debt securities of all series affected by the amendment or modification (voting together as a single class); provided, however, that each affected holder must consent to any modification, amendment or waiver that:

- extends the final maturity of any senior debt securities of such series;
- reduces the principal amount of any senior debt securities of such series;
- reduces the rate or extends the time of payment of interest on any senior debt securities of such series;
- reduces the amount payable upon the redemption of any senior debt securities of such series;
- changes the currency of payment of principal of or interest on any senior debt securities of such series;
- reduces the principal amount of original issue discount securities payable upon acceleration of maturity or the amount provable in bankruptcy;
- waives an uncured default in the payment of principal of or interest on the senior debt securities (except in the case of a rescission of acceleration as described above);
- changes the provisions relating to the waiver of past defaults or changes or impairs the right of holders to receive payment or to institute suit for the enforcement of any payment or conversion of any senior debt securities of such series on or after the due date therefor;
- modifies any of the provisions of these restrictions on amendments and modifications, except to increase any required percentage or to provide that certain other provisions cannot be modified or waived without the consent of the holder of each senior debt security of such series affected by the modification; or
- reduces the above-stated percentage of outstanding senior debt securities of such series whose holders must consent to a supplemental indenture or modifies, amends or waives certain provisions of or defaults under the senior indenture.

[Table of Contents](#)

It shall not be necessary for the holders to approve the particular form of any proposed amendment, supplement or waiver, but it shall be sufficient if the holders' consent approves the substance thereof. After an amendment, supplement or waiver of the senior indenture in accordance with the provisions described in this section becomes effective, the trustee must give to the holders affected thereby certain notice briefly describing the amendment, supplement or waiver. Any failure by the trustee to give such notice, or any defect therein, shall not, however, in any way impair or affect the validity of any such amendment, supplemental indenture or waiver.

No Personal Liability of Incorporators, Stockholders, Officers, Directors. The senior indenture provides that no recourse shall be had under any obligation, covenant or agreement of ours in the senior indenture or any supplemental indenture, or in any of the senior debt securities or because of the creation of any indebtedness represented thereby, against any of our incorporators, stockholders, officers or directors, past, present or future, or of any predecessor or successor entity thereof under any law, statute or constitutional provision or by the enforcement of any assessment or by any legal or equitable proceeding or otherwise. Each holder, by accepting the senior debt securities, waives and releases all such liability.

Concerning the Trustee. The senior indenture provides that, except during the continuance of an event of default, the trustee will not be liable except for the performance of such duties as are specifically set forth in the senior indenture. If an event of default has occurred and is continuing, the trustee will exercise such rights and powers vested in it under the senior indenture and will use the same degree of care and skill in its exercise as a prudent person would exercise under the circumstances in the conduct of such person's own affairs.

The senior indenture and the provisions of the Trust Indenture Act incorporated by reference therein contain limitations on the rights of the trustee thereunder, should it become a creditor of ours or any of our subsidiaries, to obtain payment of claims in certain cases or to realize on certain property received by it in respect of any such claims, as security or otherwise. The trustee is permitted to engage in other transactions, provided that if it acquires any conflicting interest (as defined in the Trust Indenture Act), it must eliminate such conflict or resign.

We may have normal banking relationships with the senior trustee in the ordinary course of business.

Unclaimed Funds. All funds deposited with the trustee or any paying agent for the payment of principal, premium, interest or additional amounts in respect of the senior debt securities that remain unclaimed for two years after the date upon which such principal, premium or interest became due and payable will be repaid to us. Thereafter, any right of any holder of senior debt securities to such funds shall be enforceable only against us, and the trustee and paying agents will have no liability therefor.

Governing Law. The senior indenture and the senior debt securities will be governed by, and construed in accordance with, the internal laws of the State of New York.

Certain Terms of the Subordinated Debt Securities

Other than the terms of the subordinated indenture and subordinated debt securities relating to subordination or otherwise as described in the prospectus supplement relating to a particular series of subordinated debt securities, the terms of the subordinated indenture and subordinated debt securities are identical in all material respects to the terms of the senior indenture and senior debt securities.

Additional or different subordination terms may be specified in the prospectus supplement applicable to a particular series.

Subordination. The indebtedness evidenced by the subordinated debt securities is subordinate to the prior payment in full of all of our senior indebtedness, as defined in the subordinated indenture. During the continuance beyond any applicable grace period of any default in the payment of principal, premium, interest or any other payment due on any of our senior indebtedness, we may not make any payment of principal of or

[Table of Contents](#)

interest on the subordinated debt securities (except for certain sinking fund payments). In addition, upon any payment or distribution of our assets upon any dissolution, winding-up, liquidation or reorganization, the payment of the principal of and interest on the subordinated debt securities will be subordinated to the extent provided in the subordinated indenture in right of payment to the prior payment in full of all our senior indebtedness. Because of this subordination, if we dissolve or otherwise liquidate, holders of our subordinated debt securities may receive less, ratably, than holders of our senior indebtedness. The subordination provisions do not prevent the occurrence of an event of default under the subordinated indenture.

The term “senior indebtedness” of a person means with respect to such person the principal of, premium, if any, interest on, and any other payment due pursuant to any of the following, whether outstanding on the date of the subordinated indenture or incurred by that person in the future:

- all of the indebtedness of that person for money borrowed;
- all of the indebtedness of that person evidenced by notes, debentures, bonds or other securities sold by that person for money;
- all of the lease obligations that are capitalized on the books of that person in accordance with generally accepted accounting principles;
- all indebtedness of others of the kinds described in the first two bullet points above and all lease obligations of others of the kind described in the third bullet point above that the person, in any manner, assumes or guarantees or that the person in effect guarantees through an agreement to purchase, whether that agreement is contingent or otherwise; and
- all renewals, extensions or refundings of indebtedness of the kinds described in the first, second or fourth bullet point above and all renewals or extensions of leases of the kinds described in the third or fourth bullet point above;

unless, in the case of any particular indebtedness, renewal, extension or refunding, the instrument creating or evidencing it or the assumption or guarantee relating to it expressly provides that such indebtedness, renewal, extension or refunding is not superior in right of payment to the subordinated debt securities. Our senior debt securities constitute senior indebtedness for purposes of the subordinated debt indenture.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock is intended as a summary only and therefore is not a complete description of our capital stock. This description is based upon, and is qualified by reference to, our certificate of incorporation, our bylaws and applicable provisions of Delaware corporate law. You should read our certificate of incorporation and bylaws, which are filed as exhibits to the registration statement, of which this prospectus forms a part, for the provisions that are important to you.

Our authorized capital stock consists of 125,000,000 shares of common stock, par value \$0.001 per share, and 5,000,000 shares of preferred stock, par value \$0.001 per share, all of which preferred stock is undesignated. The following description of our capital stock and provisions of our restated certificate of incorporation and bylaws are summaries and are qualified by reference to our certificate of incorporation and bylaws. Copies of these documents are filed with the SEC as exhibits to our Quarterly Report on Form 10-Q filed with the SEC on May 13, 2013.

Common Stock

As of January 24, 2018, we had outstanding 51,594,848 shares of common stock, held of record by 8 stockholders. We believe that the number of beneficial owners of our common stock at that date was substantially greater.

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. An election of directors by our stockholders shall be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. In general, except (1) for the election of directors, (2) as described below under “—Anti-Takeover Effects of Delaware Law and Our Charter and Bylaws”, (3) in the future to the extent that we have two or more classes or series of stock outstanding with separate voting rights and (4) as otherwise required by law, any matter to be voted on by our stockholders at any meeting, shall be decided by the affirmative vote of our stockholders having a majority in voting power of the votes cast by the stockholders present or represented and voting on such matter.

Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of our outstanding preferred stock.

In the event of our liquidation or dissolution, the holders of common stock are entitled to receive proportionately all assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any of our outstanding preferred stock.

Holders of common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate and issue in the future.

Listing on The NASDAQ Global Market

Our common stock is listed on The NASDAQ Global Market under the symbol “TTPH.”

Authorized but Unissued Shares

The authorized but unissued shares of common stock are available for future issuance without stockholder approval, subject to any limitations imposed by the NASDAQ Listing Rules. These additional shares may be used for a variety of corporate finance transactions, acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock could make it more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise.

[Table of Contents](#)

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.

Preferred Stock

Under the terms of our certificate of incorporation, our board of directors is authorized to issue 5,000,000 shares of preferred stock, par value \$0.001 per share, in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

If we decide to issue any preferred stock pursuant to this prospectus, we will describe in a prospectus supplement the specific terms of the preferred stock, including, if applicable, the following:

- the title and stated value;
- the number of shares we are offering;
- the liquidation preference per share;
- the purchase price;
- the dividend rate, period and payment date, and method of calculation for dividends;
- whether dividends will be cumulative and, if cumulative, the date from which dividends will accumulate;
- the relative ranking and preference of the preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs
- the procedures for any auction and remarketing;
- the provisions for a sinking fund;
- the provisions for redemption or repurchase and any restrictions on our ability to exercise those redemption and repurchase rights;
- the listing of the preferred stock on any securities exchange or market;
- whether the preferred stock will be convertible into our common stock and, if convertible, the conversion price, or how it will be calculated, and the conversion period;
- whether the preferred stock will be exchangeable into debt securities and, if exchangeable, the exchange price, or how it will be calculated, and the exchange period;
- voting rights of the preferred stock;
- preemptive rights;
- restrictions on transfer, sale or other assignment;
- whether interests in the preferred stock will be represented by depositary shares;
- a discussion of any material U.S. federal income tax considerations applicable to the preferred stock;
- any limitations on issuance of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs; and
- any other specific terms, preferences, rights or limitations of, or restrictions on, the preferred stock.

[Table of Contents](#)

The preferred stock could have other rights, including economic rights that are senior to our common stock that could adversely affect the market value of our common stock. The issuance of the preferred stock may also have the effect of delaying, deferring or preventing a change in control of us without any action by the shareholders.

Anti-Takeover Effects of Delaware Law and Our Charter and Bylaws

Delaware law, our certificate of incorporation and our bylaws contain provisions that could have the effect of delaying, deferring or discouraging another party from acquiring control of us. These provisions, which are summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors.

Staggered Board; Removal of Directors

Our certificate of incorporation and bylaws divide our board of directors into three classes with staggered three-year terms. In addition, a director may be removed only for cause and only by the affirmative vote of the holders of at least 75% of the votes that all of our stockholders would be entitled to cast in an annual election of directors. Any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office. The classification of our board of directors and the limitations on the removal of directors and filling of vacancies could make it more difficult for a third party to acquire, or discourage a third party from seeking to acquire, control of our company.

Stockholder Action by Written Consent; Special Meetings

Our certificate of incorporation provides that any action required or permitted to be taken by our stockholders must be effected at a duly called annual or special meeting of such holders and may not be effected by any consent in writing by such holders. Our certificate of incorporation and bylaws also provide that, except as otherwise required by law, special meetings of our stockholders can only be called by our chairman of the board, our chief executive officer or our board of directors.

Advance Notice Requirements for Stockholder Proposals

Our bylaws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of stockholders, including proposed nominations of persons for election to our board of directors. Stockholders at an annual meeting may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors or by a stockholder of record on the record date for the meeting who is entitled to vote at the meeting and who has delivered timely written notice in proper form to our secretary of the stockholder's intention to bring such business before the meeting. These provisions could have the effect of delaying until the next stockholder meeting stockholder actions that are favored by the holders of a majority of our outstanding voting securities. These provisions could also discourage a third party from making a tender offer for our common stock, because even if it acquired a majority of our outstanding voting stock, it would be able to take action as a stockholder, such as electing new directors or approving a merger, only at a duly called stockholders meeting and not by written consent.

Delaware Business Combination Statute

Section 203 of the General Corporation Law of the State of Delaware, which we refer to as the DGCL, is applicable to us. Section 203 of the DGCL restricts some types of transactions and business combinations between a corporation and a 15% stockholder. A 15% stockholder is generally considered by Section 203 to be a person owning 15% or more of the corporation's outstanding voting stock. Section 203 refers to a 15% stockholder as an "interested stockholder." Section 203 restricts these transactions for a period of three years

[Table of Contents](#)

from the date the stockholder acquires 15% or more of our outstanding voting stock. With some exceptions, unless the transaction is approved by the board of directors and the holders of at least two-thirds of the outstanding voting stock of the corporation, Section 203 prohibits significant business transactions such as:

- a merger with, disposition of significant assets to or receipt of disproportionate financial benefits by the interested stockholder, and
- any other transaction that would increase the interested stockholder's proportionate ownership of any class or series of our capital stock.

The shares held by the interested stockholder are not counted as outstanding when calculating the two-thirds of the outstanding voting stock needed for approval.

The prohibition against these transactions does not apply if:

- prior to the time that any stockholder became an interested stockholder, the board of directors approved either the business combination or the transaction in which such stockholder acquired 15% or more of our outstanding voting stock, or
- the interested stockholder owns at least 85% of our outstanding voting stock as a result of a transaction in which such stockholder acquired 15% or more of our outstanding voting stock. Shares held by persons who are both directors and officers or by some types of employee stock plans are not counted as outstanding when making this calculation.

Amendment of Certificate of Incorporation and Bylaws

The Delaware General Corporation Law provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or bylaws, unless a corporation's certificate of incorporation or bylaws, as the case may be, requires a greater percentage. Our bylaws may be amended or repealed by a majority vote of our board of directors or by the affirmative vote of the holders of at least 75% of the votes that all of our stockholders would be entitled to cast in any annual election of directors. In addition, the affirmative vote of the holders of at least 75% of the votes that all of our stockholders would be entitled to cast in any annual election of directors is required to amend or repeal or to adopt any provisions inconsistent with any of the provisions of our certificate of incorporation described above under "—Staggered Board; Removal of Directors" and "—Stockholder Action by Written Consent; Special Meetings."

DESCRIPTION OF WARRANTS

We may issue warrants to purchase common stock, preferred stock or debt securities. We may offer warrants separately or together with one or more additional warrants, common stock, preferred stock or debt securities, or any combination of those securities, as described in the applicable prospectus supplement. The applicable prospectus supplement will also describe the following terms of any warrants:

- the specific designation and aggregate number of, and the offering price at which we will issue, the warrants;
- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- the date on which the right to exercise the warrants will begin and the date on which that right will expire or, if you may not continuously exercise the warrants throughout that period, the specific date or dates on which you may exercise the warrants;
- whether the warrants are to be sold separately or with other securities;
- whether the warrants will be issued in definitive or global form or in any combination of these forms;
- any applicable material U.S. federal income tax consequences;
- the identity of the warrant agent for the warrants and of any other depositaries, execution or paying agents, transfer agents, registrars or other agents;
- the proposed listing, if any, of the warrants or any securities purchasable upon exercise of the warrants on any securities exchange;
- the designation and terms of any equity securities purchasable upon exercise of the warrants;
- the designation, aggregate principal amount, currency and terms of any debt securities that may be purchased upon exercise of the warrants;
- if applicable, the designation and terms of the preferred stock with which the warrants are issued and, the number of warrants issued with each security;
- the number of shares of common stock or preferred stock purchasable upon exercise of a warrant and the price at which those shares may be purchased;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;
- information with respect to book-entry procedures, if any;
- the anti-dilution provisions of, and other provisions for changes to or adjustment in the exercise price of, the warrants, if any;
- any redemption or call provisions; and
- any additional terms of the warrants, including terms, procedures and limitations relating to the exchange or exercise of the warrants.

FORMS OF SECURITIES

Each debt security and warrant will be represented either by a certificate issued in definitive form to a particular investor or by one or more global securities representing the entire issuance of securities. Unless the applicable prospectus supplement provides otherwise, certificated securities in definitive form and global securities will be issued in registered form. Definitive securities name you or your nominee as the owner of the security, and in order to transfer or exchange these securities or to receive payments other than interest or other interim payments, you or your nominee must physically deliver the securities to the trustee, registrar, paying agent or other agent, as applicable. Global securities name a depository or its nominee as the owner of the debt securities or warrants represented by these global securities. The depository maintains a computerized system that will reflect each investor's beneficial ownership of the securities through an account maintained by the investor with its broker/dealer, bank, trust company or other representative, as we explain more fully below.

Global Securities

We may issue the debt securities and warrants in the form of one or more fully registered global securities that will be deposited with a depository or its nominee identified in the applicable prospectus supplement and registered in the name of that depository or nominee. In those cases, one or more global securities will be issued in a denomination or aggregate denominations equal to the portion of the aggregate principal or face amount of the securities to be represented by global securities. Unless and until it is exchanged in whole for securities in definitive registered form, a global security may not be transferred except as a whole by and among the depository for the global security, the nominees of the depository or any successors of the depository or those nominees.

If not described below, any specific terms of the depository arrangement with respect to any securities to be represented by a global security will be described in the prospectus supplement relating to those securities. We anticipate that the following provisions will apply to all depository arrangements.

Ownership of beneficial interests in a global security will be limited to persons, called participants, that have accounts with the depository or persons that may hold interests through participants. Upon the issuance of a global security, the depository will credit, on its book-entry registration and transfer system, the participants' accounts with the respective principal or face amounts of the securities beneficially owned by the participants. Any dealers, underwriters or agents participating in the distribution of the securities will designate the accounts to be credited. Ownership of beneficial interests in a global security will be shown on, and the transfer of ownership interests will be effected only through, records maintained by the depository, with respect to interests of participants, and on the records of participants, with respect to interests of persons holding through participants. The laws of some states may require that some purchasers of securities take physical delivery of these securities in definitive form. These laws may impair your ability to own, transfer or pledge beneficial interests in global securities.

So long as the depository, or its nominee, is the registered owner of a global security, that depository or its nominee, as the case may be, will be considered the sole owner or holder of the securities represented by the global security for all purposes under the applicable indenture or warrant agreement. Except as described below, owners of beneficial interests in a global security will not be entitled to have the securities represented by the global security registered in their names, will not receive or be entitled to receive physical delivery of the securities in definitive form and will not be considered the owners or holders of the securities under the applicable indenture or warrant agreement. Accordingly, each person owning a beneficial interest in a global security must rely on the procedures of the depository for that global security and, if that person is not a participant, on the procedures of the participant through which the person owns its interest, to exercise any rights of a holder under the applicable indenture or warrant agreement. We understand that under existing industry practices, if we request any action of holders or if an owner of a beneficial interest in a global security desires to give or take any action that a holder is entitled to give or take under the applicable indenture or warrant

[Table of Contents](#)

agreement, the depository for the global security would authorize the participants holding the relevant beneficial interests to give or take that action, and the participants would authorize beneficial owners owning through them to give or take that action or would otherwise act upon the instructions of beneficial owners holding through them.

Principal, premium, if any, and interest payments on debt securities, and any payments to holders with respect to warrants, represented by a global security registered in the name of a depository or its nominee will be made to the depository or its nominee, as the case may be, as the registered owner of the global security. None of us, or any trustee, warrant agent or any other agent of ours, or any agent of any trustee or warrant agent will have any responsibility or liability for any aspect of the records relating to payments made on account of beneficial ownership interests in the global security or for maintaining, supervising or reviewing any records relating to those beneficial ownership interests.

We expect that the depository for any of the securities represented by a global security, upon receipt of any payment to holders of principal, premium, interest or other distribution of underlying securities or other property on that registered global security, will immediately credit participants' accounts in amounts proportionate to their respective beneficial interests in that global security as shown on the records of the depository. We also expect that payments by participants to owners of beneficial interests in a global security held through participants will be governed by standing customer instructions and customary practices, as is now the case with the securities held for the accounts of customers or registered in "street name," and will be the responsibility of those participants.

If the depository for any of the securities represented by a global security is at any time unwilling or unable to continue as depository or ceases to be a clearing agency registered under the Exchange Act, and a successor depository registered as a clearing agency under the Exchange Act is not appointed by us within 90 days, we will issue securities in definitive form in exchange for the global security that had been held by the depository. Any securities issued in definitive form in exchange for a global security will be registered in the name or names that the depository gives to the relevant trustee, warrant agent or other relevant agent of ours or theirs. It is expected that the depository's instructions will be based upon directions received by the depository from participants with respect to ownership of beneficial interests in the global security that had been held by the depository.

PLAN OF DISTRIBUTION

We may sell securities:

- to or through underwriters;
- to or through brokers or dealers;
- through agents;
- directly to one or more purchasers in negotiated sales or competitively bid transactions; or
- through a block trade in which the broker or dealer engaged to handle the block trade will attempt to sell the securities as agent, but may position and resell a portion of the block as principal to facilitate the transaction; or
- through a combination of any of these methods of sale.

In addition, we may issue the securities as a dividend or distribution or in a subscription rights offering to our existing security holders. This prospectus may be used in connection with any offering of our securities through any of these methods or other methods described in the applicable prospectus supplement.

We may directly solicit offers to purchase securities, or agents may be designated to solicit such offers. We will, in the prospectus supplement relating to such offering, name any agent that could be viewed as an underwriter under the Securities Act, and describe any commissions that we must pay. Any such agent will be acting on a best efforts basis for the period of its appointment or, if indicated in the applicable prospectus supplement, on a firm commitment basis.

The distribution of the securities may be effected from time to time in one or more transactions:

- at a fixed price, or prices, which may be changed from time to time;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Each prospectus supplement will describe the method of distribution of the securities and any applicable restrictions.

The prospectus supplement with respect to the securities of a particular series will describe the terms of the offering of the securities, including the following:

- the name of the agent or any underwriters;
- the public offering or purchase price and the proceeds we will receive from the sale of the securities;
- any discounts and commissions to be allowed or re-allowed or paid to the agent or underwriters;
- all other items constituting underwriting compensation;
- any discounts and commissions to be allowed or re-allowed or paid to dealers; and
- any exchanges on which the securities will be listed.

If any underwriters or agents are utilized in the sale of the securities in respect of which this prospectus is delivered, we will enter into an underwriting agreement or other agreement with them at the time of sale to them, and we will set forth in the prospectus supplement relating to such offering the names of the underwriters or agents and the terms of the related agreement with them.

[Table of Contents](#)

If a dealer is utilized in the sale of the securities in respect of which this prospectus is delivered, we will sell such securities to the dealer, as principal. The dealer may then resell such securities to the public at varying prices to be determined by such dealer at the time of resale.

If we offer securities in a subscription rights offering to our existing security holders, we may enter into a standby underwriting agreement with dealers, acting as standby underwriters. We may pay the standby underwriters a commitment fee for the securities they commit to purchase on a standby basis. If we do not enter into a standby underwriting arrangement, we may retain a dealer-manager to manage a subscription rights offering for us.

Remarketing firms, agents, underwriters, dealers and other persons may be entitled under agreements which they may enter into with us to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, and may be customers of, engage in transactions with or perform services for us in the ordinary course of business.

If so indicated in the applicable prospectus supplement, we will authorize underwriters or other persons acting as our agents to solicit offers by certain institutions to purchase securities from us pursuant to delayed delivery contracts providing for payment and delivery on the date stated in the prospectus supplement. Each contract will be for an amount not less than, and the aggregate amount of securities sold pursuant to such contracts shall not be less nor more than, the respective amounts stated in the prospectus supplement. Institutions with whom the contracts, when authorized, may be made include commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions and other institutions, but shall in all cases be subject to our approval. Delayed delivery contracts will not be subject to any conditions except that:

- the purchase by an institution of the securities covered under that contract shall not at the time of delivery be prohibited under the laws of the jurisdiction to which that institution is subject; and
- if the securities are also being sold to underwriters acting as principals for their own account, the underwriters shall have purchased such securities not sold for delayed delivery. The underwriters and other persons acting as our agents will not have any responsibility in respect of the validity or performance of delayed delivery contracts.

Certain agents, underwriters and dealers, and their associates and affiliates may be customers of, have borrowing relationships with, engage in other transactions with, and/or perform services, including investment banking services, for us or one or more of our respective affiliates in the ordinary course of business.

In order to facilitate the offering of the securities, any underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the securities or any other securities the prices of which may be used to determine payments on such securities. Specifically, any underwriters may overallocate in connection with the offering, creating a short position for their own accounts. In addition, to cover overallocations or to stabilize the price of the securities or of any such other securities, the underwriters may bid for, and purchase, the securities or any such other securities in the open market. Finally, in any offering of the securities through a syndicate of underwriters, the underwriting syndicate may reclaim selling concessions allowed to an underwriter or a dealer for distributing the securities in the offering if the syndicate repurchases previously distributed securities in transactions to cover syndicate short positions, in stabilization transactions or otherwise. Any of these activities may stabilize or maintain the market price of the securities above independent market levels. Any such underwriters are not required to engage in these activities and may end any of these activities at any time.

Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in three business days, unless the parties to any such trade expressly agree otherwise. The applicable prospectus supplement may provide that the original issue date for your securities may be more than three scheduled business days after the trade date for your securities. Accordingly, in such a case, if you wish to trade securities

[Table of Contents](#)

on any date prior to the third business day before the original issue date for your securities, you will be required, by virtue of the fact that your securities initially are expected to settle in more than three scheduled business days after the trade date for your securities, to make alternative settlement arrangements to prevent a failed settlement.

The securities may be new issues of securities and may have no established trading market. The securities may or may not be listed on a national securities exchange. We can make no assurance as to the liquidity of or the existence of trading markets for any of the securities.

In compliance with the guidelines of the Financial Industry Regulatory Authority, or FINRA, to the extent applicable, the aggregate maximum discount, commission or agency fees or other items constituting underwriting compensation to be received by any FINRA member or independent broker-dealer will not exceed 8% of the proceeds from any offering pursuant to this prospectus and any applicable prospectus supplement.

LEGAL MATTERS

Unless the applicable prospectus supplement indicates otherwise, the validity of the securities in respect of which this prospectus is being delivered will be passed upon by Wilmer Cutler Pickering Hale and Dorr LLP.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2016, and the effectiveness of our internal control over financial reporting as of December 31, 2016, as set forth in their reports, which are incorporated by reference in this prospectus and elsewhere in the registration statement. Our consolidated financial statements are incorporated by reference in reliance on Ernst & Young LLP's reports, given on their authority as experts in accounting and auditing.

\$150,000,000

TETRAPHASE PHARMACEUTICALS, INC.

**Debt Securities
Common Stock
Preferred Stock
Warrants**

PROSPECTUS

, 2018

PART II.
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

Set forth below are estimates (except in the case of the SEC registration fee) of the amount of fees and expenses to be incurred in connection with the issuance and distribution of the offered securities, other than underwriting discounts and commissions.

SEC registration fee	\$18,675.00
Printing and engraving	(1)
Accounting services	(1)
Legal fees of registrant's counsel	(1)
Miscellaneous	(1)
Total	(1)

(1) These fees are calculated based on the securities offered and the number of issuances and accordingly cannot be estimated at this time.

Item 15. Indemnification of Directors and Officers.

Section 102 of the Delaware General Corporation Law permits a corporation to eliminate the personal liability of directors of a corporation to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. Our certificate of incorporation provides that none of our directors shall be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as director, notwithstanding any provision of law imposing such liability, except to the extent that the Delaware General Corporation Law prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the Delaware General Corporation Law provides that a corporation has the power to indemnify a director, officer, employee or agent of the corporation and certain other persons serving at the request of the corporation in related capacities against expenses (including attorneys' fees), judgments, fines and amounts paid in settlements actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he or she is or is threatened to be made a party by reason of such position, if such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation and, in any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Our certificate of incorporation provides that we will indemnify each person who was or is a party or threatened to be made a party to or is involved in any threatened, pending or completed action, suit or proceeding by reason of the fact that he or she is or was a director or officer of Tetrphase, or is or was serving at our request as a director or officer of another corporation, partnership, joint venture, trust or other enterprise to the fullest extent permitted by the Delaware General Corporation Law. Our certificate of incorporation provides that expenses must be advanced to these indemnitees under certain circumstances.

The indemnification provisions contained in our certificate of incorporation are not exclusive. In addition, we have entered into indemnification agreements with each of our directors and executive officers. Each of these

[Table of Contents](#)

indemnification agreements provides that we will indemnify the director or executive officer to the fullest extent permitted by law for claims arising in his capacity as a director or executive officer, respectively, provided that he acted in good faith and in a manner that he reasonably believed to be in, or not opposed to, our best interests and, with respect to any criminal proceeding, had no reasonable cause to believe that his conduct was unlawful. Each of these indemnification agreements provides that in the event that we do not assume the defense of a claim against a director or executive officer, we are required to advance his expenses in connection with his defense, provided that he undertakes to repay all amounts advanced if it is ultimately determined that he is not entitled to be indemnified by us.

In addition, we maintain standard policies of insurance under which coverage is provided to our directors and officers against losses arising from claims made by reason of breach of duty or other wrongful act, and to us with respect to payments which may be made by us to such directors and officers pursuant to the above indemnification provisions or otherwise as a matter of law. In any underwriting agreement we enter into in connection with the sale of common stock being registered hereby, the underwriters will agree to indemnify, under certain conditions, us, our directors, our officers and persons who control us within the meaning of the Securities Act of 1933, as amended, against certain liabilities.

Item 16. Exhibits.

EXHIBIT INDEX

Exhibit No.	Description
1*	Form of Underwriting Agreement
3.1	Restated Certificate of Incorporation of the Registrant (previously filed as Exhibit 3.1 to the Registrant's quarterly report on Form 10-Q for the quarter ended March 31, 2013 filed with the Securities and Exchange Commission on May 13, 2013 (File No. 001-35837) and incorporated herein by reference)
3.2	Amended and Restated By-laws of the Registrant (previously filed as Exhibit 3.2 to the Registrant's quarterly report on Form 10-Q for the quarter ended March 31, 2013 filed with the Securities and Exchange Commission on May 13, 2013 (File No. 001-35837) and incorporated herein by reference)
4.1	Form of Senior Indenture
4.2	Form of Subordinated Indenture
4.3	Form of Senior Note
4.4	Form of Subordinated Note
4.5*	Form of Warrant Agreement
5.1	Opinion of Wilmer Cutler Pickering Hale and Dorr LLP
12	Calculation of Consolidated Ratios of Earnings to Fixed Charges
23.1	Consent of Ernst & Young LLP, independent registered public accounting firm
23.2	Consent of Wilmer Cutler Pickering Hale and Dorr LLP (included in Exhibit 5.1)
24	Powers of Attorney (included in the signature pages to the Registration Statement)
25.1**	The Statement of Eligibility on Form T-1 under the Trust Indenture Act of 1939, as amended, of the Trustee under the Senior Indenture
25.2**	The Statement of Eligibility on Form T-1 under the Trust Indenture Act of 1939, as amended, of the Trustee under the Subordinated Indenture

* To be filed by amendment or by a Current Report on Form 8-K.

** To be filed pursuant to Section 305(b)(2) of the Trust Indenture Act of 1939.

[Table of Contents](#)

Item 17. Undertakings.

The undersigned Registrant hereby undertakes:

- (a)(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) to include any prospectus required by Section 10(a)(3) of the Securities Act of 1933, as amended, or the Securities Act;
 - (ii) to reflect in the prospectus any facts or events arising after the effective date of this registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
 - (iii) to include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement;

provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by a Registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, that are incorporated by reference in this registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of this registration statement.

- (2) That, for the purposes of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at the time shall be deemed to be the initial *bona fide* offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act to any purchaser:
 - (i) each prospectus filed by the Registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and
 - (ii) each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii) or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof; *provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of

[Table of Contents](#)

contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

- (5) That, for the purpose of determining liability of the Registrant under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned Registrant undertakes that in a primary offering of securities of the undersigned Registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned Registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
- (i) any preliminary prospectus or prospectus of the undersigned Registrant relating to the offering required to be filed pursuant to Rule 424;
 - (ii) any free writing prospectus relating to the offering prepared by or on behalf of the undersigned Registrant or used or referred to by the undersigned Registrant;
 - (iii) the portion of any other free writing prospectus relating to the offering containing material information about the undersigned Registrant or its securities provided by or on behalf of the undersigned Registrant; and
 - (iv) any other communication that is an offer in the offering made by the undersigned Registrant to the purchaser.
- (6) That, for purposes of determining any liability under the Securities Act:
- (i) the information omitted from the form of prospectus filed as part of the registration statement in reliance upon Rule 430A and contained in the form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of the registration statement as of the time it was declared effective; and
 - (ii) each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (b) That, for purposes of determining any liability under the Securities Act, each filing of the Registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in this registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (c) To supplement, if applicable, the prospectus, after the expiration of the subscription period, to set forth the results of the subscription offer, the transaction by the underwriters during the subscription period, the amount of unsubscribed securities to be purchased by the underwriters, and the terms of any subsequent reoffering thereof. If any public offering by the underwriters is to be made on terms differing from those set forth on the cover page of the prospectus, a post-effective amendment will be filed to set forth the terms of such offering.
- (d) To file an application for the purpose of determining the eligibility of the trustee to act under subsection (a) of Section 310 of the Trust Indenture Act in accordance with the rules and regulations prescribed by the Commission under Section 305(b)(2) of the Trust Indenture Act.
- (e) That, insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the indemnification provisions described herein, or otherwise, the Registrant has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the

[Table of Contents](#)

successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

[Table of Contents](#)

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Watertown, Commonwealth of Massachusetts, on January 25, 2018.

TETRAPHASE PHARMACEUTICALS, INC.

By: /s/ Guy Macdonald

Name: Guy Macdonald

Title: President and Chief Executive Officer

SIGNATURES AND POWER OF ATTORNEY

We, the undersigned officers and directors of Tetrphase Pharmaceuticals, Inc., hereby severally constitute and appoint Guy Macdonald and Maria Stahl, and each of them singly, our true and lawful attorneys with full power to any of them, and to each of them singly, to sign for us and in our names in the capacities indicated below the Registration Statement on Form S-3 filed herewith and any and all amendments (including post-effective amendments) to said Registration Statement, and any registration statement filed pursuant to Rule 462 under the Securities Act of 1933, as amended, in connection with said Registration Statement, and to file or cause to be filed the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, and generally to do all such things in our name and on our behalf in our capacities as officers and directors to enable Tetrphase Pharmaceuticals, Inc. to comply with the provisions of the Securities Act of 1933, as amended, and all requirements of the Securities and Exchange Commission, hereby ratifying and confirming all that said attorneys, and each of them, or their substitute or substitutes, shall do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Guy Macdonald</u> Guy Macdonald	President, Chief Executive Officer (Principal Executive Officer) and a Director	January 25, 2018
<u>/s/ Kamalam Unninayar</u> Kamalam Unninayar	Chief Financial Officer (Principal Financial and Accounting Officer)	January 25, 2018
<u>/s/ L. Patrick Gage</u> L. Patrick Gage, Ph.D.	Chairman of the Board	January 25, 2018
<u>/s/ Garen Bohlin</u> Garen Bohlin	Director	January 25, 2018
<u>/s/ Jeffrey Chodakewitz</u> Jeffrey Chodakewitz, M.D.	Director	January 22, 2018
<u>/s/ John G. Freund</u> John G. Freund, M.D.	Director	January 25, 2018
<u>/s/ Geraldine Henwood</u> Geraldine Henwood	Director	January 25, 2018
<u>/s/ Nancy Wysenski</u> Nancy Wysenski	Director	January 22, 2018

TETRAPHASE PHARMACEUTICALS, INC.

and

Trustee

INDENTURE

Dated as of

SENIOR DEBT SECURITIES

CROSS-REFERENCE TABLE(1)

<u>Section of Trust Indenture Act of 1939, as amended</u>	<u>Section of Indenture</u>
310(a)	6.09
310(b)	6.08
	6.10
310(c)	Inapplicable
311(a)	6.13
311(b)	6.13
311(c)	Inapplicable
312(a)	4.01
	4.04
312(b)	4.04(c)
312(c)	4.04(c)
313(a)	4.03
313(b)	4.03
313(c)	4.03
313(d)	4.03
314(a)	4.02
314(b)	Inapplicable
314(c)	2.04
	8.04
	9.01(c)
	10.01(b)
	11.05
314(d)	Inapplicable
314(e)	11.05
314(f)	Inapplicable
315(a)	6.01
	6.02
315(b)	5.11
315(c)	6.01
315(d)	6.01
	6.02
315(e)	5.12
316(a)	5.09
	5.10
	7.04
316(b)	5.06
	5.10
316(c)	7.02
317(a)	5.04
317(b)	3.04
318(a)	11.07

(1) This Cross-Reference Table does not constitute part of the Indenture and shall not have any bearing on the interpretation of any of its terms or provisions.

TABLE OF CONTENTS

	Page
ARTICLE 1 DEFINITIONS	1
Section 1.01 Certain Terms Defined	1
ARTICLE 2 SECURITIES	6
Section 2.01 Forms Generally	6
Section 2.02 Form of Trustee's Certificate of Authentication	6
Section 2.03 Amount Unlimited; Issuable in Series	6
Section 2.04 Authentication and Delivery of Securities	9
Section 2.05 Execution of Securities	10
Section 2.06 Certificate of Authentication	11
Section 2.07 Denomination and Date of Securities; Payments of Interest	11
Section 2.08 Registration, Transfer and Exchange	11
Section 2.09 Mutilated, Defaced, Destroyed, Lost and Stolen Securities	14
Section 2.10 Cancellation of Securities; Destruction Thereof	14
Section 2.11 Temporary Securities	15
ARTICLE 3 COVENANTS OF THE ISSUER	15
Section 3.01 Payment of Principal and Interest	15
Section 3.02 Offices for Payments, Etc	15
Section 3.03 Appointment to Fill a Vacancy in Office of Trustee	16
Section 3.04 Paying Agents	16
Section 3.05 Written Statement to Trustee	17
ARTICLE 4 SECURITYHOLDERS LISTS AND REPORTS BY THE ISSUER AND THE TRUSTEE	17
Section 4.01 Issuer to Furnish Trustee Information as to Names and Addresses of Securityholders	17
Section 4.02 Reports by the Issuer	17
Section 4.03 Reports by the Trustee	18
Section 4.04 Preservation of Information; Communication with Securityholders	18
ARTICLE 5 REMEDIES OF THE TRUSTEE AND SECURITYHOLDERS ON EVENT OF DEFAULT	18
Section 5.01 Event of Default Defined; Acceleration of Maturity; Waiver of Default	18
Section 5.02 Collection of Debt by Trustee; Trustee May Prove Debt	20
Section 5.03 Application of Proceeds	22
Section 5.04 Suits for Enforcement	23
Section 5.05 Restoration of Rights on Abandonment of Proceedings	23
Section 5.06 Limitations on Suits by Securityholders	23
Section 5.07 Unconditional Right of Securityholders to Institute Certain Suits	24
Section 5.08 Powers and Remedies Cumulative; Delay or Omission Not Waiver of Default	24
Section 5.09 Control by Holders of Securities	24
Section 5.10 Waiver of Past Defaults	25

Section 5.11	Trustee to Give Notice of Default	25
Section 5.12	Right of Court to Require Filing of Undertaking to Pay Costs	25
ARTICLE 6	CONCERNING THE TRUSTEE	26
Section 6.01	Duties and Responsibilities of the Trustee; During Default; Prior to Default	26
Section 6.02	Certain Rights of the Trustee	26
Section 6.03	Trustee Not Responsible for Recitals, Disposition of Securities or Application of Proceeds Thereof	28
Section 6.04	Trustee and Agents May Hold Securities; Collections, Etc	28
Section 6.05	Moneys Held by Trustee	28
Section 6.06	Compensation and Indemnification of Trustee and Its Prior Claim	28
Section 6.07	Right of Trustee to Rely on Officer's Certificate, Etc	29
Section 6.08	Disqualification; Conflicting Interests	29
Section 6.09	Persons Eligible for Appointment as Trustee	29
Section 6.10	Resignation and Removal; Appointment of Successor Trustee	29
Section 6.11	Acceptance of Appointment by Successor Trustee	30
Section 6.12	Merger, Conversion, Consolidation or Succession to Business of Trustee	31
Section 6.13	Preferential Collection of Claims Against the Issuer	32
ARTICLE 7	CONCERNING THE SECURITYHOLDERS	32
Section 7.01	Evidence of Action Taken by Securityholders	32
Section 7.02	Proof of Execution of Instruments and of Holding of Securities	32
Section 7.03	Holder to Be Treated as Owner	32
Section 7.04	Securities Owned by Issuer Deemed Not Outstanding	33
Section 7.05	Right of Revocation of Action Taken	33
ARTICLE 8	SUPPLEMENTAL INDENTURES	33
Section 8.01	Supplemental Indentures Without Consent of Securityholders	33
Section 8.02	Supplemental Indentures With Consent of Securityholders	35
Section 8.03	Effect of Supplemental Indenture	36
Section 8.04	Documents to Be Given to Trustee	36
Section 8.05	Notation on Securities in Respect of Supplemental Indentures	36
ARTICLE 9	CONSOLIDATION, MERGER, SALE OR CONVEYANCE	37
Section 9.01	Issuer May Consolidate, Etc., on Certain Terms	37
Section 9.02	Successor Issuer Substituted	38
ARTICLE 10	SATISFACTION AND DISCHARGE OF INDENTURE; DEFEASANCE; UNCLAIMED MONEYS	38
Section 10.01	Satisfaction and Discharge of Indenture; Defeasance	38
Section 10.02	Application by Trustee of Funds Deposited for Payment of Securities	41
Section 10.03	Repayment of Moneys Held by Paying Agent	42
Section 10.04	Return of Moneys Held by Trustee and Paying Agent Unclaimed for Two Years	42
Section 10.05	Indemnity for U.S. Government Obligations	42

ARTICLE 11 MISCELLANEOUS PROVISIONS	42
Section 11.01 No Recourse	42
Section 11.02 Provisions of Indenture for the Sole Benefit of Parties and Holders of Securities	43
Section 11.03 Successors and Assigns of Issuer Bound by Indenture	43
Section 11.04 Notices and Demands on Issuer, Trustee and Holders of Securities	43
Section 11.05 Officer's Certificates and Opinions of Counsel; Statements to Be Contained Therein	44
Section 11.06 Payments Due on Saturdays, Sundays and Holidays	45
Section 11.07 Conflict of Any Provision of Indenture With Trust Indenture Act of 1939	45
Section 11.08 New York Law to Govern	45
Section 11.09 Counterparts	45
Section 11.10 Effect of Headings	45
Section 11.11 Actions by Successor	45
Section 11.12 Severability	45
ARTICLE 12 REDEMPTION OF SECURITIES AND SINKING FUNDS	45
Section 12.01 Applicability of Article	45
Section 12.02 Notice of Redemption; Partial Redemptions	46
Section 12.03 Payment of Securities Called for Redemption	47
Section 12.04 Exclusion of Certain Securities from Eligibility for Selection for Redemption	47
Section 12.05 Mandatory and Optional Sinking Funds	48
ARTICLE 13 SUBORDINATION OF SECURITIES	50
Section 13.01 Agreement of Subordination	50
Section 13.02 Payments to Securityholders	50
Section 13.03 Subrogation of Securities	52
Section 13.04 Authorization by Securityholders	52
Section 13.05 Notice to Trustee	53
Section 13.06 Trustee's Relation to Senior Indebtedness	53
Section 13.07 No Impairment of Subordination	54
Section 13.08 Rights of Trustee	54

THIS INDENTURE, dated as of _____ between Tetrphase Pharmaceuticals, Inc., a Delaware corporation (the “**Issuer**”), and _____, a
(the “**Trustee**”),

WITNESSETH:

WHEREAS, the Issuer may from time to time duly authorize the issue of its unsecured debentures, notes or other evidences of indebtedness to be issued in one or more series (the “**Securities**”), up to such principal amount or amounts as may from time to time be authorized in accordance with the terms of this Indenture;

WHEREAS, the Issuer has duly authorized the execution and delivery of this Indenture to provide, among other things, for the authentication, delivery and administration of the Securities; and

WHEREAS, all things necessary to make this Indenture a valid indenture and agreement according to its terms have been done;

NOW, THEREFORE:

In consideration of the premises and the purchases of the Securities by the holders thereof, the Issuer and the Trustee mutually covenant and agree for the equal and proportionate benefit of the respective holders from time to time of the Securities as follows:

ARTICLE 1
DEFINITIONS

Section 1.01 *Certain Terms Defined.* The following terms (except as otherwise expressly provided or unless the context otherwise clearly requires) for all purposes of this Indenture and of any indenture supplemental hereto shall have the respective meanings specified in this Section. All other terms used in this Indenture that are defined in the Trust Indenture Act of 1939 or the definitions of which in the Securities Act of 1933 are referred to in the Trust Indenture Act of 1939, including terms defined therein by reference to the Securities Act of 1933 (except as herein otherwise expressly provided or unless the context otherwise clearly requires), shall have the meanings assigned to such terms in said Trust Indenture Act and in said Securities Act as in force at the date of this Indenture. All accounting terms used herein and not expressly defined shall have the meanings assigned to such terms in accordance with generally accepted accounting principles, and the term “**generally accepted accounting principles**” means such accounting principles as are generally accepted in the United States at the time of any computation. The words “herein”, “hereof” and “hereunder” and other words of similar import refer to this Indenture as a whole and not to any particular Article, Section or other subdivision. The terms defined in this Article have the meanings assigned to them in this Article and include the plural as well as the singular.

“**Board of Directors**” means either the Board of Directors of the Issuer or any committee of such Board duly authorized to act on its behalf.

“**Board Resolution**” means a copy of one or more resolutions, certified by the secretary or an assistant secretary of the Issuer to have been duly adopted by the Board of Directors and to be in full force and effect, and delivered to the Trustee.

“**Business Day**” means, with respect to any Security, a day that in the city (or in any of the cities, if more than one) in which amounts are payable, as specified in the form of such Security, is not a day on which banking institutions are authorized or required by law or regulation to close.

“**Commission**” means the Securities and Exchange Commission, as from time to time constituted, created under the Securities Exchange Act of 1934, or if at any time after the execution and delivery of this Indenture such Commission is not existing and performing the duties now assigned to it under the Trust Indenture Act of 1939, then the body performing such duties on such date.

“**Common Stock**” means shares of common stock, par value \$0.001 per share, of the Issuer as the same exists at the date of execution and delivery of this Indenture or as such stock may be reconstituted from time to time.

“**Corporate Trust Office**” means the office of the Trustee at which the corporate trust business of the Trustee shall, at any particular time, be principally administered, which office is, at the date as of which this Indenture is dated, located at

“**Debt**” of any Person means any debt for money borrowed which is created, assumed, incurred or guaranteed in any manner by such Person or for which such Person is otherwise responsible or liable, and shall expressly include any such guaranty thereof by such Person. For the purpose of computing the amount of the Debt of any Person there shall be excluded all Debt of such Person for the payment or redemption or satisfaction of which money or securities (or evidences of such Debt, if permitted under the terms of the instrument creating such Debt) in the necessary amount shall have been deposited in trust with the proper depository, whether upon or prior to the maturity or the date fixed for redemption of such Debt; and, in any instance where Debt is so excluded, for the purpose of computing the assets of such Person there shall be excluded the money, securities or evidences of Debt deposited by such Person in trust for the purpose of paying or satisfying such Debt.

“**Depository**” means, with respect to the Securities of any series issuable or issued in the form of one or more Global Securities, the Person designated as Depository by the Issuer pursuant to Section 2.04 until a successor Depository shall have become such pursuant to the applicable provisions of this Indenture, and thereafter “**Depository**” shall mean or include each Person who is then a Depository hereunder, and if at any time there is more than one such Person, “**Depository**” as used with respect to the Securities of any such series shall mean the Depository with respect to the Global Securities of that series.

“**Dollar**” means the currency of the United States of America as at the time of payment is legal tender for the payment of public and private debts.

“**Event of Default**” means any event or condition specified as such in Section 5.01.

“Foreign Currency” means a currency issued by the government of a country other than the United States.

“Global Security” means a Security evidencing all or a part of a series of Securities, issued to the Depository for such series in accordance with Section 2.04, and bearing the legend prescribed in Section 2.04.

“Holder”, **“holder”**, **“holder of Securities”**, **“Securityholder”** or other similar terms mean the Person in whose name such Security is registered in the Security register kept by the Issuer for that purpose in accordance with the terms hereof.

“Indenture” means this instrument as originally executed and delivered or, if amended or supplemented as herein provided, as so amended or supplemented or both, and shall include the forms and terms of particular series of Securities established as contemplated hereunder.

“interest”, unless the context otherwise requires, refers to interest, and when used with respect to non-interest bearing Securities, refers to interest payable after maturity, if any.

“Issuer” means Tetrphase Pharmaceuticals, Inc., a Delaware corporation, and, subject to Article 9, its successors and assigns.

“Issuer Order” means a written statement, request or order of the Issuer signed in its name by the chairman of the Board of Directors, the president or any vice president of the Issuer.

“Notice of Default” shall have the meaning set forth in Section 5.01(c).

“Officer’s Certificate” means a certificate signed by the chairman of the Board of Directors, the president, any vice president, the treasurer, the secretary or any assistant secretary of the Issuer and delivered to the Trustee. Each such certificate shall comply with Section 314 of the Trust Indenture Act of 1939 and, except to the extent provided herein, shall include the statements provided for in Section 11.05.

“Opinion of Counsel” means an opinion in writing signed by the general corporate counsel or such other legal counsel who may be an employee of or counsel to the Issuer and who shall be satisfactory to the Trustee. Each such opinion shall comply with Section 314 of the Trust Indenture Act of 1939 and shall include the statements provided for in Section 11.05, if and to the extent required hereby.

“original issue date” of any Security (or portion thereof) means the earlier of (a) the date of such Security or (b) the date of any Security (or portion thereof) for which such Security was issued (directly or indirectly) on registration of transfer, exchange or substitution.

“Original Issue Discount Security” means any Security that provides for an amount less than the principal amount thereof to be due and payable upon a declaration of acceleration of the maturity thereof pursuant to Section 5.01.

“Outstanding”, when used with reference to Securities, shall, subject to the provisions of Section 7.04, mean, as of any particular time, all Securities authenticated and delivered by the Trustee under this Indenture, except

- (a) Securities theretofore cancelled by the Trustee or delivered to the Trustee for cancellation;
- (b) Securities, or portions thereof, for the payment or redemption of which cash or U.S. Government Obligations (as provided for in Section 10.01 (a) and Section 10.01(b)) in the necessary amount shall have been deposited in trust with the Trustee or with any paying agent (other than the Issuer) or shall have been set aside, segregated and held in trust by the Issuer for the Holders of such Securities (if the Issuer shall act as its own paying agent); *provided*, that if such Securities, or portions thereof, are to be redeemed prior to the maturity thereof, notice of such redemption shall have been given as herein provided, or provision satisfactory to the Trustee shall have been made for giving such notice; and
- (c) Securities in substitution for which other Securities shall have been authenticated and delivered, or which shall have been paid, pursuant to the terms of Section 2.09 (except with respect to any such Security as to which proof satisfactory to the Trustee is presented that such Security is held by a Person in whose hands such Security is a legal, valid and binding obligation of the Issuer), Securities converted into Common Stock pursuant hereto and Securities not deemed outstanding pursuant to Section 12.02.

In determining whether the Holders of the requisite principal amount of Outstanding Securities of any or all series have given any request, demand, authorization, direction, notice, consent or waiver hereunder, the principal amount of an Original Issue Discount Security that shall be deemed to be Outstanding for such purposes shall be the amount of the principal thereof that would be due and payable as of the date of such determination upon a declaration of acceleration of the maturity thereof pursuant to Section 5.01.

“Person” means any individual, corporation, partnership, limited partnership, limited liability company, joint venture, association, joint stock company, trust, unincorporated organization or government or any agency or political subdivision thereof.

“principal” whenever used with reference to the Securities or any Security or any portion thereof, shall be deemed to include “and premium, if any”.

“record date” shall have the meaning set forth in Section 2.07.

“Responsible Officer”, when used with respect to the Trustee, means the chairman of the board of directors, any vice chairman of the board of directors, the chairman of the trust committee, the chairman of the executive committee, any vice chairman of the executive committee, the president, any vice president, the cashier, the secretary, the treasurer, any trust officer, any assistant trust officer, any assistant vice president, any assistant cashier, any assistant secretary, any assistant treasurer, or any other officer or assistant officer of the Trustee customarily performing functions similar to those performed by the persons who at the time shall be such officers, respectively, or to whom any corporate trust matter is referred because of his or her knowledge of and familiarity with the particular subject.

“**Security**” or “**Securities**” has the meaning stated in the first recital of this Indenture, or, as the case may be, Securities that have been authenticated and delivered under this Indenture.

“**Security Registrar**” shall have the meaning set forth in Section 4.01(b).

“**Subsidiary**” means a corporation of which stock having a majority of the voting power under ordinary circumstances is owned, directly or indirectly, by the Issuer or by one or more subsidiaries of the Issuer, or by the Issuer and one or more subsidiaries of the Issuer.

“**Trust Indenture Act of 1939**” (except as otherwise provided in Sections 8.01 and 8.02) means the Trust Indenture Act of 1939 as in force at the date as of which this Indenture was originally executed.

“**Trustee**” means the Person identified as “**Trustee**” in the first paragraph hereof and, subject to the provisions of Article 6, shall also include any successor trustee. “**Trustee**” shall also mean or include each Person who is then a trustee hereunder and if at any time there is more than one such Person, “**Trustee**” as used with respect to the Securities of any series shall mean the trustee with respect to the Securities of such series.

“**U.S. Government Obligation**” means (a) a direct obligation of the United States of America, backed by its full faith and credit, or (b) an obligation of a Person controlled or supervised by and acting as an agency or instrumentality of the United States of America, the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America.

“**vice president**”, when used with respect to the Issuer or the Trustee, means any vice president, whether or not designated by a number or a word or words added before or after the title of “vice president”.

“**Yield to Maturity**” means the yield to maturity on a series of securities, calculated at the time of issuance of such series, or, if applicable, at the most recent redetermination of interest on such series, and calculated in accordance with accepted financial practice.

ARTICLE 2 SECURITIES

Section 2.01 *Forms Generally*. The Securities of each series shall be substantially in such form (not inconsistent with this Indenture) as shall be established by or pursuant to one or more Board Resolutions (as set forth in a Board Resolution or, to the extent established pursuant to (rather than set forth in) a Board Resolution, an Officer’s Certificate detailing such establishment) or in one or more indentures supplemental hereto, in each case with such appropriate insertions, omissions, substitutions and other variations as are required or permitted by this Indenture and may have imprinted or otherwise reproduced thereon such legend or legends or endorsements, not inconsistent with the provisions of this Indenture, as may be required to comply with any law or with any rules or regulations

pursuant thereto, or with any rules of any securities exchange or to conform to general usage, all as may be determined by the officers executing such Securities as evidenced by their execution of such Securities.

The definitive Securities shall be printed, lithographed or engraved on steel engraved borders or may be produced in any other manner, all as determined by the officers executing such Securities as evidenced by their execution of such Securities.

Section 2.02 *Form of Trustee's Certificate of Authentication*. The Trustee's certificate of authentication on all Securities shall be in substantially the following form:

This is one of the Securities of the series designated herein and referred to in the within-mentioned Indenture.

as Trustee

By: _____
Authorized Officer

Section 2.03 *Amount Unlimited; Issuable in Series*. The aggregate principal amount of Securities which may be authenticated and delivered under this Indenture is unlimited.

The Securities may be issued in one or more series. The terms of a series of Securities shall be established prior to the initial issuance thereof in or pursuant to one or more Board Resolutions, or, to the extent established pursuant to (rather than set forth in) a Board Resolution, in an Officer's Certificate detailing such establishment and/or established in one or more indentures supplemental hereto. The terms of such series reflected in such Board Resolution, Officer's Certificate, or supplemental indenture may include the following or any additional or different terms:

- (a) the designation of the Securities of the series (which may be part of a series of Securities previously issued);
- (b) the terms and conditions, if applicable, upon which conversion or exchange of the Securities into Common Stock will be effected, including the initial conversion or exchange price or rate and any adjustments thereto, the conversion or exchange period and other provisions in addition to or in lieu of those described herein;
- (c) any limit upon the aggregate principal amount of the Securities of the series that may be authenticated and delivered under this Indenture (except for Securities authenticated and delivered upon registration of transfer of, or in exchange for, or in lieu of, other Securities of the series pursuant to Section 2.08, 2.09, 2.11, 8.05 or 12.03);

-
- (d) if other than Dollars, the Foreign Currency in which the Securities of that series are denominated;
- (e) any date on which the principal of the Securities of the series is payable and the right, if any, to extend such date or dates;
- (f) the rate or rates at which the Securities of the series shall bear interest, if any, the record date or dates for the determination of holders to whom interest is payable, the date or dates from which such interest shall accrue and on which such interest shall be payable and/or the method by which such rate or rates or date or dates shall be determined, and the right, if any, to extend the interest payment periods and the duration of that extension;
- (g) the place or places where the principal of and any interest on Securities of the series shall be payable (if other than as provided in Section 3.02);
- (h) the price or prices at which, the period or periods within which and the terms and conditions upon which Securities of the series may be redeemed, in whole or in part, at the option of the Issuer, pursuant to any sinking fund or otherwise;
- (i) the obligation, if any, of the Issuer to redeem, purchase or repay Securities of the series pursuant to any mandatory redemption, sinking fund or analogous provisions or at the option of a Holder thereof and the price or prices at which and the period or periods within which and any terms and conditions upon which Securities of the series shall be redeemed, purchased or repaid, in whole or in part, pursuant to such obligation;
- (j) if other than denominations of \$1,000 and any integral multiple thereof, the denominations in which Securities of the series shall be issuable;
- (k) if other than the principal amount thereof, the portion of the principal amount of Securities of the series which shall be payable upon declaration of acceleration of the maturity thereof;
- (l) if other than the currency in which the Securities of that series are denominated, the currency in which payment of the principal of or interest on the Securities of such series shall be payable;
- (m) if the principal of or interest on the Securities of the series is to be payable, at the election of the Issuer or a Holder thereof, in a currency other than that in which the Securities are denominated, the period or periods within which, and the terms and conditions upon which, such election may be made;
- (n) if the amount of payments of principal of and interest on the Securities of the series may be determined with reference to an index based on a currency other than that in which the Securities of the series are denominated, or by reference to one or more currency exchange rates, securities or baskets of securities, commodity prices or indices, the manner in which such amounts shall be determined;

-
- (o) if Sections 10.01(b) or 10.01(c) are inapplicable to Securities of such series;
- (p) whether and under what circumstances the Issuer will pay additional amounts on the Securities of any series in respect of any tax, assessment or governmental charge withheld or deducted and, if so, whether the Issuer will have the option to redeem such Securities rather than pay such additional amounts;
- (q) if the Securities of such series are to be issuable in definitive form (whether upon original issue or upon exchange of a temporary Security of such series) only upon receipt of certain certificates or other documents or satisfaction of other conditions, then the form and terms of such certificates, documents or conditions;
- (r) any trustees, authenticating or paying agents, transfer agents or registrars or any other agents with respect to the Securities of such series;
- (s) any other events of default or covenants with respect to the Securities of such series in addition to or in lieu of those contained in this Indenture;
- (t) if the Securities of the series may be issued in exchange for surrendered Securities of another series, or for other securities of the Issuer, pursuant to the terms of such Securities or securities or of any agreement entered into by the Issuer, the ratio of the principal amount of the Securities of the series to be issued to the principal amount of the Securities or securities to be surrendered in exchange, and any other material terms of the exchange; and
- (u) any other terms of the series.

The Issuer may from time to time, without notice to or the consent of the holders of any series of Securities, create and issue further Securities of any such series ranking equally with the Securities of such series in all respects (or in all respects other than (1) the payment of interest accruing prior to the issue date of such further Securities or (2) the first payment of interest following the issue date of such further Securities). Such further Securities may be consolidated and form a single series with the Securities of such series and have the same terms as to status, redemption or otherwise as the Securities of such series.

Section 2.04 *Authentication and Delivery of Securities*. The Issuer may deliver Securities of any series executed by the Issuer to the Trustee for authentication together with the applicable documents referred to below in this Section, and the Trustee shall thereupon authenticate and deliver such Securities to or upon the order of the Issuer (contained in the Issuer Order referred to below in this Section) or pursuant to such procedures acceptable to the Trustee and to such recipients as may be specified from time to time by an Issuer Order. The maturity date, original issue date, interest rate and any other terms of the Securities of such series shall be determined by or pursuant to such Issuer Order and procedures. If provided for in such procedures, such Issuer Order may authorize authentication and delivery pursuant to oral instructions from the Issuer or its duly authorized agent, which instructions shall be promptly confirmed in writing. In authenticating such Securities and accepting the additional responsibilities under this Indenture in relation to such Securities, the Trustee shall be entitled to receive, and (subject to Section 6.01) shall be fully protected in relying upon:

- (a) an Issuer Order requesting such authentication and setting forth delivery instructions if the Securities are not to be delivered to the Issuer;

(b) any Board Resolution, Officer's Certificate and/or executed supplemental indenture referred to in Sections 2.01 and 2.03 by or pursuant to which the forms and terms of the Securities were established;

(c) an Officer's Certificate setting forth the form or forms and terms of the Securities stating that the form or forms and terms of the Securities have been established pursuant to Sections 2.01 and 2.03 and comply with this Indenture, and covering such other matters as the Trustee may reasonably request; and

(d) an Opinion of Counsel to the effect that:

(i) the form or forms and terms of such Securities have been established pursuant to Sections 2.01 and 2.03 and comply with this Indenture,

(ii) the authentication and delivery of such Securities by the Trustee are authorized under the provisions of this Indenture,

(iii) such Securities when authenticated and delivered by the Trustee and issued by the Issuer in the manner and subject to any conditions specified in such Opinion of Counsel, will constitute valid and binding obligations of the Issuer, and

(iv) all laws and requirements in respect of the execution and delivery by the Issuer of the Securities have been complied with,

and covering such other matters as the Trustee may reasonably request.

The Trustee shall have the right to decline to authenticate and deliver any Securities under this Section if the Trustee, being advised by counsel, determines that such action may not lawfully be taken by the Issuer or if the Trustee in good faith by its board of directors or board of trustees, executive committee, or a trust committee of directors or trustees or Responsible Officers shall determine that such action would expose the Trustee to personal liability to existing Holders or would affect the Trustee's own rights, duties or immunities under the Securities, this Indenture or otherwise.

The Issuer shall execute and the Trustee shall, in accordance with this Section with respect to the Securities of a series, authenticate and deliver one or more Global Securities that (i) shall represent and shall be denominated in an amount equal to the aggregate principal amount of all of the Securities of such series issued and not yet cancelled, (ii) shall be registered in the name of the Depository for such Global Security or Securities or the nominee of such Depository, (iii) shall be delivered by the Trustee to such Depository or pursuant to such Depository's instructions and (iv) shall bear a legend substantially to the following effect:

"Unless and until it is exchanged in whole or in part for Securities in definitive registered form, this Security may not be transferred except as a whole by the Depository to the nominee of the Depository or by a nominee of the Depository to the Depository or another nominee of the Depository or by the Depository or any such nominee to a successor Depository or a nominee of such successor Depository."

Each Depositary designated pursuant to this Section must, at the time of its designation and at all times while it serves as Depositary, be a clearing agency registered under the Securities Exchange Act of 1934 and any other applicable statute or regulation.

Section 2.05 *Execution of Securities*. The Securities shall be signed on behalf of the Issuer by the chairman of its Board of Directors, any vice chairman of its Board of Directors, its chief executive officer, its principal financial officer, its president, any vice president or its treasurer. Such signatures may be the manual or facsimile signatures of the present or any future such officers. Typographical and other minor errors or defects in any such reproduction of any such signature shall not affect the validity or enforceability of any Security that has been duly authenticated and delivered by the Trustee.

In case any officer of the Issuer who shall have signed any of the Securities shall cease to be such officer before the Security so signed shall be authenticated and delivered by the Trustee or disposed of by the Issuer, such Security nevertheless may be authenticated and delivered or disposed of as though the person who signed such Security had not ceased to be such officer of the Issuer; and any Security may be signed on behalf of the Issuer by such persons as, at the actual date of the execution of such Security, shall be the proper officers of the Issuer, although at the date of the execution and delivery of this Indenture any such person was not such an officer.

Section 2.06 *Certificate of Authentication*. Only such Securities as shall bear thereon a certificate of authentication substantially in the form hereinbefore recited, executed by the Trustee by the manual signature of one of its authorized officers, shall be entitled to the benefits of this Indenture or be valid or obligatory for any purpose. The execution of such certificate by the Trustee upon any Security executed by the Issuer shall be conclusive evidence that the Security so authenticated has been duly authenticated and delivered hereunder and that the Holder is entitled to the benefits of this Indenture.

Section 2.07 *Denomination and Date of Securities; Payments of Interest*. The Securities of each series shall be issuable in denominations established as contemplated by Section 2.03 or, if not so established, in denominations of \$1,000 and any integral multiple thereof. The Securities of each series shall be numbered, lettered or otherwise distinguished in such manner or in accordance with such plan as the officers of the Issuer executing the same may determine with the approval of the Trustee, as evidenced by the execution and authentication thereof. Unless otherwise indicated in a Board Resolution, Officer's Certificate or supplemental indenture for a particular series, interest will be calculated on the basis of a 360-day year of twelve 30-day months.

Each Security shall be dated the date of its authentication. The Securities of each series shall bear interest, if any, from the date, and such interest shall be payable on the dates, established as contemplated by Section 2.03.

The Person in whose name any Security of any series is registered at the close of business on any record date applicable to a particular series with respect to any interest payment date for such series shall be entitled to receive the interest, if any, payable on such interest payment date notwithstanding any transfer, exchange or conversion of such Security subsequent to the record date and prior to such interest payment date, except if and to the extent the Issuer shall default in the payment of the interest due on such interest payment date for such series, in which case such defaulted interest shall be paid to the Persons in whose names Outstanding Securities for such series are registered at the close of business on a subsequent record date (which shall be not less than five Business Days prior to the date of payment of such defaulted interest) established by notice given by mail by or on behalf of the Issuer to the Holders of Securities not less than 15 days preceding such subsequent record date. The term “**record date**” as used with respect to any interest payment date (except a date for payment of defaulted interest) for the Securities of any series shall mean the date specified as such in the terms of the Securities of such series established as contemplated by Section 2.03, or, if no such date is so established, if such interest payment date is the first day of a calendar month, the 15th day of the immediately preceding calendar month or, if such interest payment date is the 15th day of a calendar month, the first day of such calendar month, whether or not such record date is a Business Day.

Section 2.08 *Registration, Transfer and Exchange*. The Issuer will keep at each office or agency to be maintained for the purpose as provided in Section 3.02 for each series of Securities a register or registers in which, subject to such reasonable regulations as it may prescribe, it will provide for the registration of Securities of such series and the registration of transfer of Securities of such series. Such register shall be in written form in the English language or in any other form capable of being converted into such form within a reasonable time. At all reasonable times such register or registers shall be open for inspection by the Trustee.

Upon due presentation for registration of transfer of any Security of any series at any such office or agency to be maintained for the purpose as provided in Section 3.02, the Issuer shall execute and the Trustee shall authenticate and deliver in the name of the transferee or transferees a new Security or Securities of the same series, maturity date, interest rate and original issue date in authorized denominations for a like aggregate principal amount.

At the option of the Holder thereof, Securities of any series (except a Global Security) may be exchanged for a Security or Securities of such series having authorized denominations and an equal aggregate principal amount, upon surrender of such Securities to be exchanged at the agency of the Issuer that shall be maintained for such purpose in accordance with Section 3.02 and upon payment, if the Issuer shall so require, of the charges hereinafter provided. Whenever any Securities are so surrendered for exchange, the Issuer shall execute, and the Trustee shall authenticate and deliver, the Securities which the Holder making the exchange is entitled to receive. All Securities surrendered upon any exchange or transfer provided for in this Indenture shall be promptly cancelled and disposed of by the Trustee and the Trustee will deliver a certificate of disposition thereof to the Issuer.

All Securities presented for registration of transfer, exchange, redemption or payment shall (if so required by the Issuer or the Trustee) be duly endorsed by, or be accompanied by a written instrument or instruments of transfer in form satisfactory to the Issuer and the Trustee duly executed by, the Holder or his or her attorney duly authorized in writing.

The Issuer may require payment of a sum sufficient to cover any stamp or other tax or other governmental charge that may be imposed in connection with any exchange or registration of transfer of Securities. No service charge shall be made for any such transaction.

The Issuer shall not be required to exchange or register a transfer of (a) any Securities of any series for a period of 15 days immediately preceding the first mailing of notice of redemption of Securities of such series to be redeemed or (b) any Securities selected, called or being called for redemption, in whole or in part, except, in the case of any Security to be redeemed in part, the portion thereof not so to be redeemed.

Notwithstanding any other provision of this Section 2.08, unless and until it is exchanged in whole or in part for Securities in definitive registered form, a Global Security representing all or a portion of the Securities of a series may not be transferred except as a whole by the Depositary for such series to a nominee of such Depositary or by a nominee of such Depositary to such Depositary or another nominee of such Depositary or by such Depositary or any such nominee to a successor Depositary for such series or a nominee of such successor Depositary.

If at any time the Depositary for the Securities of a series notifies the Issuer that it is unwilling or unable to continue as Depositary for the Securities of such series or if at any time the Depositary for the Securities of a series shall no longer be eligible under Section 2.04, the Issuer shall appoint a successor Depositary with respect to the Securities of such series. If a successor Depositary for the Securities of such series is not appointed by the Issuer within 90 days after the Issuer receives such notice or becomes aware of such ineligibility, the Issuer's determination pursuant to Section 2.03 that the Securities of such series be represented by a Global Security shall no longer be effective and the Issuer will execute, and the Trustee, upon receipt of an Officer's Certificate for the authentication and delivery of definitive Securities of such series, will authenticate and deliver, Securities of such series in definitive registered form, in any authorized denominations, in an aggregate principal amount equal to the principal amount of the Global Security or Securities representing the Securities of such series, in exchange for such Global Security or Securities.

The Issuer may at any time and in its sole discretion determine that the Securities of any series issued in the form of one or more Global Securities shall no longer be represented by a Global Security or Securities. In such event the Issuer will execute, and the Trustee, upon receipt of an Officer's Certificate for the authentication and delivery of definitive Securities of such series, will authenticate and deliver, Securities of such series in definitive registered form, in any authorized denominations, in an aggregate principal amount equal to the principal amount of the Global Security or Securities representing such series, in exchange for such Global Security or Securities.

The Depositary for such Global Security may surrender such Global Security in exchange in whole or in part for Securities of the same series in definitive registered form in accordance

with the two preceding paragraphs or on such other terms as are acceptable to the Issuer and such Depository. Thereupon, the Issuer shall execute, and the Trustee shall authenticate and deliver, without service charge,

(i) to the Person specified by such Depository a new Security or Securities of the same series, of any authorized denominations as requested by such Person, in an aggregate principal amount equal to and in exchange for such Person's beneficial interest in the Global Security; and

(ii) to such Depository a new Global Security in a denomination equal to the difference, if any, between the principal amount of the surrendered Global Security and the aggregate principal amount of Securities authenticated and delivered pursuant to clause (i) above.

Upon the exchange of a Global Security for Securities in definitive registered form, in authorized denominations, such Global Security shall be cancelled by the Trustee. Securities in definitive registered form issued in exchange for a Global Security pursuant to this Section 2.08 shall be registered in such names and in such authorized denominations as the Depository for such Global Security, pursuant to instructions from its direct or indirect participants or otherwise, shall instruct the Trustee. The Trustee shall deliver such Securities to or as directed by the Persons in whose names such Securities are so registered.

All Securities issued upon any transfer or exchange of Securities shall be valid obligations of the Issuer, evidencing the same debt, and entitled to the same benefits under this Indenture, as the Securities surrendered upon such transfer or exchange.

Section 2.09 *Mutilated, Defaced, Destroyed, Lost and Stolen Securities*. In case any temporary or definitive Security shall become mutilated, defaced or be destroyed, lost or stolen, the Issuer in its discretion may execute, and upon the written request of any officer of the Issuer, the Trustee shall authenticate and deliver a new Security of the same series, maturity date, interest rate and original issue date, bearing a number or other distinguishing symbol not contemporaneously outstanding, in exchange and substitution for the mutilated or defaced Security, or in lieu of and substitution for the Security so destroyed, lost or stolen. In every case the applicant for a substitute Security shall furnish to the Issuer and to the Trustee and any agent of the Issuer or the Trustee such security or indemnity as may be required by them to indemnify and defend and to save each of them harmless and, in every case of destruction, loss or theft, evidence to their satisfaction of the destruction, loss or theft of such Security and of the ownership thereof and in the case of mutilation or defacement shall surrender the Security to the Trustee.

Upon the issuance of any substitute Security, the Issuer may require the payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto and any other expenses (including the fees and expenses of the Trustee) connected therewith. In case any Security which has matured or is about to mature or has been called for redemption in full, or is being surrendered for conversion in full, shall become mutilated or defaced or be destroyed, lost or stolen, the Issuer may, instead of issuing a substitute Security (with the Holder's consent, in the case of convertible Securities), pay or authorize the payment of

the same or convert, or authorize conversion of the same (without surrender thereof except in the case of a mutilated or defaced Security), if the applicant for such payment shall furnish to the Issuer and to the Trustee and any agent of the Issuer or the Trustee such security or indemnity as any of them may require to save each of them harmless, and, in every case of destruction, loss or theft, the applicant shall also furnish to the Issuer and the Trustee and any agent of the Issuer or the Trustee evidence to their satisfaction of the destruction, loss or theft of such Security and of the ownership thereof.

Every substitute Security of any series issued pursuant to the provisions of this Section by virtue of the fact that any such Security is destroyed, lost or stolen shall constitute an additional contractual obligation of the Issuer, whether or not the destroyed, lost or stolen Security shall be at any time enforceable by anyone and shall be entitled to all the benefits of (but shall be subject to all the limitations of rights set forth in) this Indenture equally and proportionately with any and all other Securities of such series duly authenticated and delivered hereunder. All Securities shall be held and owned upon the express condition that, to the extent permitted by law, the foregoing provisions are exclusive with respect to the replacement or payment or conversion of mutilated, defaced or destroyed, lost or stolen Securities and shall preclude any and all other rights or remedies notwithstanding any law or statute existing or hereafter enacted to the contrary with respect to the replacement or payment of negotiable instruments or other securities without their surrender.

Section 2.10 *Cancellation of Securities; Destruction Thereof.* All Securities surrendered for exchange for Securities of the same series or for payment, redemption, registration of transfer, conversion or for credit against any payment in respect of a sinking or analogous fund, if surrendered to the Issuer or any agent of the Issuer or the Trustee, shall be delivered to the Trustee for cancellation or, if surrendered to the Trustee, shall be cancelled by it; and no Securities shall be issued in lieu thereof except as expressly permitted by any of the provisions of this Indenture. The Trustee shall dispose of cancelled Securities held by it and deliver a certificate of disposition to the Issuer. If the Issuer shall acquire any of the Securities, such acquisition shall not operate as a redemption or satisfaction of the Debt represented by such Securities unless and until the same are delivered to the Trustee for cancellation.

Section 2.11 *Temporary Securities.* Pending the preparation of definitive Securities for any series, the Issuer may execute and the Trustee shall authenticate and deliver temporary Securities for such series (printed, lithographed, typewritten or otherwise reproduced, in each case in form satisfactory to the Trustee). Temporary Securities of any series shall be issuable in any authorized denomination, and substantially in the form of the definitive Securities of such series but with such omissions, insertions and variations as may be appropriate for temporary Securities, all as may be determined by the Issuer with the concurrence of the Trustee as evidenced by the execution and authentication thereof. Temporary Securities may contain such reference to any provisions of this Indenture as may be appropriate. Every temporary Security shall be executed by the Issuer and be authenticated by the Trustee upon the same conditions and in substantially the same manner, and with like effect, as the definitive Securities. Without unreasonable delay the Issuer shall execute and shall furnish definitive Securities of such series and thereupon temporary Securities of such series may be surrendered in exchange therefor without charge at each

office or agency to be maintained by the Issuer for that purpose pursuant to Section 3.02 and the Trustee shall authenticate and deliver in exchange for such temporary Securities of such series an equal aggregate principal amount of definitive Securities of the same series having authorized denominations. Until so exchanged, the temporary Securities of any series shall be entitled to the same benefits under this Indenture as definitive Securities of such series, unless the benefits of the temporary Securities are limited pursuant to Section 2.03.

ARTICLE 3
COVENANTS OF THE ISSUER

Section 3.01 *Payment of Principal and Interest.* The Issuer covenants and agrees for the benefit of each series of Securities that it will duly and punctually pay or cause to be paid the principal of, and interest on, each of the Securities of such series (together with any additional amounts payable pursuant to the terms of such Securities) at the place or places, at the respective times and in the manner provided in such Securities and in this Indenture. The interest on Securities (together with any additional amounts payable pursuant to the terms of such Securities) shall be payable only to or upon the written order of the Holders thereof and at the option of the Issuer may be paid by mailing checks for such interest payable to or upon the written order of such Holders at their last addresses as they appear on the Security register of the Issuer.

Section 3.02 *Offices for Payments, Etc.* The Issuer will maintain (i) in _____, an agency where the Securities of each series may be presented for payment, an agency where the Securities of each series may be presented for exchange and conversion, if applicable, as provided in this Indenture and an agency where the Securities of each series may be presented for registration of transfer as in this Indenture provided and (ii) such further agencies in such places as may be determined for the Securities of such series pursuant to Section 2.03.

The Issuer will maintain in _____, an agency where notices and demands to or upon the Issuer in respect of the Securities of any series or this Indenture may be served.

The Issuer will give to the Trustee written notice of the location of each such agency and of any change of location thereof. In case the Issuer shall fail to maintain any agency required by this Section to be located in _____, or shall fail to give such notice of the location or of any change in the location of any of the above agencies, presentations and demands may be made and notices may be served at the Corporate Trust Office of the Trustee.

The Issuer may from time to time designate one or more additional agencies where the Securities of a series may be presented for payment, where the Securities of that series may be presented for exchange or conversion, if applicable, as provided in this Indenture and pursuant to Section 2.03 and where the Securities of that series may be presented for registration of transfer as in this Indenture provided, and the Issuer may from time to time rescind any such designation, as the Issuer may deem desirable or expedient; *provided, however*, that no such designation or rescission shall in any manner relieve the Issuer of its obligation to maintain the agencies provided for in this Section. The Issuer will give to the Trustee prompt written notice of any such designation or rescission thereof.

Section 3.03 *Appointment to Fill a Vacancy in Office of Trustee*. The Issuer, whenever necessary to avoid or fill a vacancy in the office of Trustee, will appoint, in the manner provided in Section 6.10, a Trustee, so that there shall at all times be a Trustee with respect to each series of Securities hereunder.

Section 3.04 *Paying Agents*. Whenever the Issuer shall appoint a paying agent other than the Trustee with respect to the Securities of any series, it will cause such paying agent to execute and deliver to the Trustee an instrument in which such agent shall agree with the Trustee, subject to the provisions of this Section,

(a) that it will hold all sums received by it as such agent for the payment of the principal of or interest on the Securities of such series (whether such sums have been paid to it by the Issuer or by any other obligor on the Securities of such series) in trust for the benefit of the Holders of the Securities of such series or of the Trustee,

(b) that it will give the Trustee notice of any failure by the Issuer (or by any other obligor on the Securities of such series) to make any payment of the principal of or interest on the Securities of such series when the same shall be due and payable, and

(c) that at any time during the continuance of any such failure, upon the written request of the Trustee, it will forthwith pay to the Trustee all sums so held in trust by such paying agent.

The Issuer will, on or prior to each due date of the principal of or interest on the Securities of such series, deposit with the paying agent a sum sufficient to pay such principal or interest so becoming due, and (unless such paying agent is the Trustee) the Issuer will promptly notify the Trustee of any failure to take such action.

If the Issuer shall act as its own paying agent with respect to the Securities of any series, it will, on or before each due date of the principal of or interest on the Securities of such series, set aside, segregate and hold in trust for the benefit of the Holders of the Securities of such series a sum sufficient to pay such principal or interest so becoming due. The Issuer will promptly notify the Trustee of any failure to take such action.

Anything in this Section to the contrary notwithstanding, but subject to Section 10.01, the Issuer may at any time, for the purpose of obtaining a satisfaction and discharge with respect to one or more or all series of Securities hereunder, or for any other reason, pay or cause to be paid to the Trustee all sums held in trust for any such series by the Issuer or any paying agent hereunder, as required by this Section, such sums to be held by the Trustee upon the trusts herein contained.

Anything in this Section to the contrary notwithstanding, the agreement to hold sums in trust as provided in this Section is subject to the provisions of Sections 10.03 and 10.04.

Section 3.05 *Written Statement to Trustee*. So long as any Securities are Outstanding hereunder, the Issuer will deliver to the Trustee, within 120 days after the end of each fiscal year of the Issuer ending after the date hereof, a written statement covering the previous fiscal year, signed by two of its officers (which need not comply with Section 11.05),

stating that in the course of the performance of their duties as officers of the Issuer they would normally have knowledge of any default by the Issuer in the performance or fulfillment of any covenant, agreement or condition contained in this Indenture, stating whether or not they have knowledge of any such default and, if so, specifying each such default of which the signers have knowledge and the nature thereof.

ARTICLE 4
SECURITYHOLDERS LISTS AND REPORTS BY THE ISSUER AND THE TRUSTEE

Section 4.01 *Issuer to Furnish Trustee Information as to Names and Addresses of Securityholders.* The Issuer covenants and agrees that it will furnish or cause to be furnished to the Trustee a list in such form as the Trustee may reasonably require of the names and addresses of the Holders of the Securities of each series pursuant to Section 312 of the Trust Indenture Act of 1939:

(a) semiannually and not more than 15 days after each record date for the payment of interest on such Securities, as hereinabove specified, as of such record date and on dates to be determined pursuant to Section 2.03 for non-interest bearing Securities in each year, and

(b) at such other times as the Trustee may request in writing, within 30 days after receipt by the Issuer of any such request as of a date not more than 15 days prior to the time such information is furnished, *provided*, that, if and so long as the Trustee shall be the Security registrar (the “**Security Registrar**”) for such series, such list shall not be required to be furnished.

Section 4.02 *Reports by the Issuer.* The Issuer covenants to comply with Section 314(a) of the Trust Indenture Act insofar as it relates to information, documentations, and other reports which the Issuer may be required to file with the Commission pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934.

Section 4.03 *Reports by the Trustee.* Any Trustee’s report required under Section 313(a) of the Trust Indenture Act of 1939 shall be transmitted on or before _____ in each year following the date hereof, so long as any Securities are Outstanding hereunder, and shall be dated as of a date convenient to the Trustee but no more than 60 nor less than 45 days prior thereto. The Trustee shall comply with Sections 313(b), 313(c) and 313(d) of the Trust Indenture Act.

Section 4.04 *Preservation of Information; Communication with Securityholders.* (a) The Trustee shall preserve, in as current a form as is reasonably practicable, all information as to the names and addresses of the holders of Securities contained in the most recent list furnished to it as provided in Section 4.01 and as to the names and addresses of holders of Securities received by the Trustee in its capacity as Security Registrar (if acting in such capacity).

(b) The Trustee may destroy any list furnished to it as provided in Section 4.01 upon receipt of a new list so furnished.

(c) Securityholders may communicate as provided in Section 312(b) of the Trust Indenture Act with other Securityholders with respect to their rights under this Indenture or under the Securities. The Issuer, the Trustee, the Security Registrar and any other Person shall have the protection of Section 312(c) of the Trust Indenture Act.

ARTICLE 5
REMEDIES OF THE TRUSTEE AND SECURITYHOLDERS ON EVENT OF DEFAULT

Section 5.01 *Event of Default Defined; Acceleration of Maturity; Waiver of Default*. “**Event of Default**”, with respect to Securities of any series wherever used herein, means each one of the following events which shall have occurred and be continuing (whatever the reason for such Event of Default and whether it shall be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body):

(a) default in the payment of any installment of interest upon any of the Securities of such series as and when the same shall become due and payable, and continuance of such default for a period of 90 days (or such other period as may be established for the Securities of such series as contemplated by Section 2.03); or

(b) default in the payment of all or any part of the principal on any of the Securities of such series as and when the same shall become due and payable either at maturity, upon redemption, by declaration or otherwise (and, if established for the Securities of such series as contemplated by Section 2.03, the continuance of such default for a specified period); or

(c) default in the performance, or breach, of any covenant or agreement of the Issuer in respect of the Securities of such series (other than a covenant or agreement in respect of the Securities of such series a default in the performance or breach of which is elsewhere in this Section specifically dealt with), and continuance of such default or breach for a period of 90 days after there has been given, by registered or certified mail, to the Issuer by the Trustee or to the Issuer and the Trustee by the Holders of at least 25% in principal amount of the Outstanding Securities of all series affected thereby, a written notice specifying such default or breach and requiring it to be remedied and stating that such notice is a “**Notice of Default**” hereunder; or

(d) a court having jurisdiction in the premises shall enter a decree or order for relief in respect of the Issuer in an involuntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or appointing a receiver, liquidator, assignee, custodian, trustee or sequestrator (or similar official) of the Issuer or for all or substantially all of its property and assets or ordering the winding up or liquidation of its affairs, and such decree or order shall remain unstayed and in effect for a period of 90 consecutive days; or

(e) the Issuer shall commence a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or consent to the entry of an order for relief in an involuntary case under any such law, or consent to the

appointment of or taking possession by a receiver, liquidator, assignee, custodian, trustee or sequestrator (or similar official) of the Issuer or for any substantial part of its property and assets, or make any general assignment for the benefit of creditors; or

(f) any other Event of Default provided for in such series of Securities.

If an Event of Default described in clauses (a), (b), (c) or (f) occurs and is continuing, then, and in each and every such case, unless the principal of all of the Securities of such series shall have already become due and payable, either the Trustee or the Holders of not less than 25% in aggregate principal amount of the Securities of such series then Outstanding hereunder (each such series voting as a separate class) by notice in writing to the Issuer (and also to the Trustee if given by Securityholders), may declare the entire principal (or, if the Securities of such series are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) of all Securities of such series and the interest accrued thereon, if any, to be due and payable immediately, and upon any such declaration the same shall become immediately due and payable. If an Event of Default described in clauses (d) or (e) occurs and is continuing, then and in each and every such case, the entire principal (or, if any Securities are Original Issue Discount Securities, such portion of the principal as may be specified in the terms thereof) of all the Securities then Outstanding and interest accrued thereon, if any, shall become immediately due and payable.

The foregoing provisions, however, are subject to the condition that if, at any time after the principal of the Securities of any series shall have been so declared due and payable, and before any judgment or decree for the payment of the moneys due shall have been obtained or entered as hereinafter provided, the Issuer shall pay or shall deposit with the Trustee a sum sufficient to pay all matured installments of interest upon all the Securities of such series and the principal of any and all Securities of such series which shall have become due otherwise than by acceleration (with interest upon such principal and, to the extent that payment of such interest is enforceable under applicable law, on overdue installments of interest, at the same rate as the rate of interest specified in the Securities of such series to the date of such payment or deposit) and such amount as shall be sufficient to cover reasonable compensation to the Trustee, its agents, attorneys and counsel, and all other expenses and liabilities incurred, and all advances made, by the Trustee except as a result of negligence or bad faith, and if any and all Events of Default under the Indenture with respect to such series, other than the non-payment of the principal of Securities of such series which shall have become due solely by such acceleration, shall have been cured, waived or otherwise remedied as provided herein, then and in every such case the Holders of a majority in aggregate principal amount of all the Securities of such series then Outstanding, by written notice to the Issuer and to the Trustee, may waive all defaults with respect to such series and rescind and annul such declaration and its consequences, but no such waiver or rescission and annulment shall extend to or shall affect any subsequent default or shall impair any right consequent thereon.

Unless otherwise indicated in the Board Resolution, Officer's Certificate or supplemental indenture for a series of Original Issue Discount Securities, for all purposes under this Indenture, if a portion of the principal of any Original Issue Discount Securities shall have been accelerated and declared due and payable pursuant to the provisions hereof, then, from and after such declaration, unless such declaration has been rescinded and annulled, the principal amount of

such Original Issue Discount Securities shall be deemed, for all purposes hereunder, to be such portion of the principal thereof as shall be due and payable as a result of such acceleration, and payment of such portion of the principal thereof as shall be due and payable as a result of such acceleration, together with interest, if any, thereon and all other amounts owing thereunder, shall constitute payment in full of such Original Issue Discount Securities.

Section 5.02 *Collection of Debt by Trustee; Trustee May Prove Debt.* The Issuer covenants that (a) in case default shall be made in the payment of any installment of interest on any of the Securities of any series when such interest shall have become due and payable, and such default shall have continued for a period of 30 days or (b) in case default shall be made in the payment of all or any part of the principal of any of the Securities of any series when the same shall have become due and payable, whether upon maturity of the Securities of such series or upon any redemption or by declaration or otherwise—then, upon demand of the Trustee, the Issuer will pay to the Trustee for the benefit of the Holders of the Securities of such series the whole amount that then shall have become due and payable on all Securities of such series for principal or interest, as the case may be (with interest to the date of such payment upon the overdue principal and, to the extent that payment of such interest is enforceable under applicable law, on overdue installments of interest at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in the Securities of such series); and, in addition thereto, such further amount as shall be sufficient to cover the costs and expenses of collection, including reasonable compensation to the Trustee and each predecessor trustee, their respective agents, attorneys and counsel, and any expenses and liabilities incurred, and all advances made, by the Trustee and each predecessor trustee except as a result of its negligence or bad faith.

In case the Issuer shall fail forthwith to pay such amounts upon such demand, the Trustee, in its own name and as trustee of an express trust, shall be entitled and empowered to institute any action or proceedings at law or in equity for the collection of the sums so due and unpaid, and may prosecute any such action or proceedings to judgment or final decree, and may enforce any such judgment or final decree against the Issuer or other obligor upon such Securities and collect in the manner provided by law out of the property of the Issuer or other obligor upon such Securities, wherever situated, the moneys adjudged or decreed to be payable.

In case there shall be pending proceedings relative to the Issuer or any other obligor upon the Securities under Title 11 of the United States Code or any other applicable Federal or state bankruptcy, insolvency or other similar law, or in case a receiver, assignee or trustee in bankruptcy or reorganization, liquidator, sequestrator or similar official shall have been appointed for or taken possession of the Issuer or its property or such other obligor or its property, or in case of any other comparable judicial proceedings relative to the Issuer or other obligor upon the Securities of any series, or to the creditors or property of the Issuer or such other obligor, the Trustee, irrespective of whether the principal of any Securities shall then be due and payable as therein expressed or by declaration or otherwise and irrespective of whether the Trustee shall have made any demand pursuant to the provisions of this Section, shall be entitled and empowered, by intervention in such proceedings or otherwise:

- (i) to file and prove a claim or claims for the whole amount of principal and interest (or, if the Securities of any series are Original Issue

Discount Securities, such portion of the principal amount as may be specified in the terms of such series) owing and unpaid in respect of the Securities of any series, and to file such other papers or documents as may be necessary or advisable in order to have the claims of the Trustee (including any claim for reasonable compensation to the Trustee and each predecessor trustee, and their respective agents, attorneys and counsel, and for reimbursement of all expenses and liabilities incurred, and all advances made, by the Trustee and each predecessor trustee, except as a result of negligence or bad faith) and of the Securityholders allowed in any judicial proceedings relative to the Issuer or other obligor upon the Securities of any series, or to the creditors or property of the Issuer or such other obligor,

(ii) unless prohibited by applicable law and regulations, to vote on behalf of the Holders of the Securities of any series in any election of a trustee or a standby trustee in arrangement, reorganization, liquidation or other bankruptcy or insolvency proceedings or person performing similar functions in comparable proceedings, and

(iii) to collect and receive any moneys or other property payable or deliverable on any such claims, and to distribute all amounts received with respect to the claims of the Securityholders and of the Trustee on their behalf; and any trustee, receiver or liquidator, custodian or other similar official is hereby authorized by each of the Securityholders to make payments to the Trustee, and, in the event that the Trustee shall consent to the making of payments directly to the Securityholders, to pay to the Trustee such amounts as shall be sufficient to cover reasonable compensation to the Trustee, each predecessor trustee and their respective agents, attorneys and counsel, and all other expenses and liabilities incurred, and all advances made, by the Trustee and each predecessor trustee except as a result of negligence or bad faith and all other amounts due to the Trustee or any predecessor trustee pursuant to Section 6.06.

Nothing herein contained shall be deemed to authorize the Trustee to authorize or consent to or vote for or accept or adopt on behalf of any Securityholder any plan of reorganization, arrangement, adjustment or composition affecting the Securities of any series or the rights of any Holder thereof, or to authorize the Trustee to vote in respect of the claim of any Securityholder in any such proceeding except, as aforesaid, to vote for the election of a trustee in bankruptcy or similar person.

All rights of action and of asserting claims under this Indenture, or under any of the Securities of any series, may be enforced by the Trustee without the possession of any of the Securities of such series or the production thereof on any trial or other proceedings relative thereto, and any such action or proceedings instituted by the Trustee shall be brought in its own name as trustee of an express trust, and any recovery of judgment, subject to the payment of the expenses, disbursements and compensation of the Trustee, each predecessor trustee and their respective agents and attorneys, shall be for the ratable benefit of the Holders of the Securities in respect of which such action was taken.

In any proceedings brought by the Trustee (and also any proceedings involving the interpretation of any provision of this Indenture to which the Trustee shall be a party), the Trustee shall be held to represent all the Holders of the Securities in respect to which such action was taken, and it shall not be necessary to make any Holders of such Securities parties to any such proceedings.

Section 5.03 *Application of Proceeds*. Any moneys collected by the Trustee pursuant to this Article in respect of any series shall be applied in the following order at the date or dates fixed by the Trustee and, in case of the distribution of such moneys on account of principal or interest, upon presentation of the several Securities in respect of which monies have been collected and stamping (or otherwise noting) thereon the payment, or issuing Securities of such series in reduced principal amounts in exchange for the presented Securities of like series if only partially paid, or upon surrender thereof if fully paid:

FIRST: To the payment of all amounts due to the Trustee or any predecessor trustee pursuant to Section 6.06;

SECOND: In case the principal of the Securities of such series in respect of which moneys have been collected shall not have become and be then due and payable, to the payment of interest on the Securities of such series in default in the order of the maturity of the installments of such interest, with interest (to the extent that such interest has been collected by the Trustee) upon the overdue installments of interest, to the extent permitted by applicable law, at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in such Securities, such payments to be made ratably to the Persons entitled thereto, without discrimination or preference;

THIRD: In case the principal of the Securities of such series in respect of which moneys have been collected shall have become and shall be then due and payable, to the payment of the whole amount then owing and unpaid upon all the Securities of such series for principal and interest, with interest upon the overdue principal, and (to the extent that such interest has been collected by the Trustee) upon overdue installments of interest, to the extent permitted by applicable law, at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in the Securities of such series; and in case such moneys shall be insufficient to pay in full the whole amount so due and unpaid upon the Securities of such series, then to the payment of such principal and interest, without preference or priority of principal over interest, or of interest over principal, or of any installment of interest over any other installment of interest, or of any Security of such series over any other Security of such series, ratably to the aggregate of such principal and accrued and unpaid interest; and

FOURTH: To the payment of the remainder, if any, to the Issuer or any other Person lawfully entitled thereto.

Section 5.04 *Suits for Enforcement*. In case an Event of Default has occurred, has not been waived and is continuing, the Trustee may in its discretion proceed to protect and enforce the rights vested in it by this Indenture by such appropriate judicial proceedings

as the Trustee shall deem most effectual to protect and enforce any such rights, either at law or in equity or in bankruptcy or otherwise, whether for the specific enforcement of any covenant or agreement contained in this Indenture or in aid of the exercise of any power granted in this Indenture or to enforce any other legal or equitable right vested in the Trustee by this Indenture or by law.

Section 5.05 *Restoration of Rights on Abandonment of Proceedings*. In case the Trustee shall have proceeded to enforce any right under this Indenture and such proceedings shall have been discontinued or abandoned for any reason, or shall have been determined adversely to the Trustee, then and in every such case (subject to any determination in such proceeding) the Issuer and the Trustee shall be restored respectively to their former positions and rights hereunder, and all rights, remedies and powers of the Issuer, the Trustee and the Securityholders shall continue as though no such proceedings had been taken.

Section 5.06 *Limitations on Suits by Securityholders*. No Holder of any Security of any series shall have any right by virtue or by availing of any provision of this Indenture to institute any action or proceeding at law or in equity or in bankruptcy or otherwise upon or under or with respect to this Indenture, or for the appointment of a trustee, receiver, liquidator, custodian or other similar official or for any other remedy hereunder, unless such Holder previously shall have given to the Trustee written notice of default and of the continuance thereof, as hereinbefore provided, and unless also the Holders of not less than 25% in aggregate principal amount of the Securities of such series then Outstanding shall have made written request upon the Trustee to institute such action or proceedings in its own name as trustee hereunder and shall have offered to the Trustee such reasonable indemnity as it may require against the costs, expenses and liabilities to be incurred therein or thereby and the Trustee for 60 days after its receipt of such notice, request and offer of indemnity shall have failed to institute any such action or proceeding and no direction inconsistent with such written request shall have been given to the Trustee pursuant to Section 5.09; it being understood and intended, and being expressly covenanted by the Holder of every Security with every other Holder and the Trustee, that no one or more Holders of Securities of any series shall have any right in any manner whatever by virtue or by availing of any provision of this Indenture to affect, disturb or prejudice the rights of any other such Holder of Securities, or to obtain or seek to obtain priority over or preference to any other such Holder or to enforce any right under this Indenture, except in the manner herein provided and for the equal, ratable and common benefit of all Holders of Securities of the applicable series. For the protection and enforcement of the provisions of this Section, each and every Securityholder and the Trustee shall be entitled to such relief as can be given either at law or in equity.

Section 5.07 *Unconditional Right of Securityholders to Institute Certain Suits*. Notwithstanding any other provision in this Indenture and any provision of any Security, the right of any Holder of any Security to receive payment of the principal of and interest on such Security on or after the respective due dates expressed in such Security in accordance with the terms hereof and thereof, or to institute suit for the enforcement of any such payment on or after such respective dates, shall not be impaired or affected without the consent of such Holder; it being understood and intended, and being expressly covenanted by the Holder of every Security with every other Holder and the Trustee, that no one or more

Holders of Securities of any series shall have any right in any manner whatever by virtue or by availing of any provision of this Indenture to affect, disturb or prejudice the rights of any other such Holder of Securities, or to obtain or seek to obtain priority over or preference to any other such Holder or to enforce any right under this Indenture, except in the manner herein provided and for the equal, ratable and common benefit of all Holders of Securities of the applicable series. For the protection and enforcement of the provisions of this Section, each and every Securityholder and the Trustee shall be entitled to such relief as can be given either at law or in equity.

Section 5.08 *Powers and Remedies Cumulative; Delay or Omission Not Waiver of Default.* Except as provided in Section 5.06, no right or remedy herein conferred upon or reserved to the Trustee or to the Holders of Securities is intended to be exclusive of any other right or remedy, and every right and remedy shall, to the extent permitted by law, be cumulative and in addition to every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other appropriate right or remedy.

No delay or omission of the Trustee or of any Holder of Securities to exercise any right or power accruing upon any Event of Default occurring and continuing as aforesaid shall impair any such right or power or shall be construed to be a waiver of any such Event of Default or an acquiescence therein; and, subject to Section 5.06, every power and remedy given by this Indenture or by law to the Trustee or to the Holders of Securities may be exercised from time to time, and as often as shall be deemed expedient, by the Trustee or by the Holders of Securities.

Section 5.09 *Control by Holders of Securities.* The Holders of a majority in aggregate principal amount of the Securities of each series affected (with each series voting as a separate class) at the time Outstanding shall have the right to direct the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred on the Trustee with respect to the Securities of such series by this Indenture; *provided*, that such direction shall not be otherwise than in accordance with law and the provisions of this Indenture and provided, further, that (subject to the provisions of Section 6.01) the Trustee shall have the right to decline to follow any such direction if the Trustee, being advised by counsel, shall determine that the action or proceeding so directed may not lawfully be taken or if the Trustee in good faith by its board of directors, the executive committee, or a trust committee of directors or Responsible Officers of the Trustee shall determine that the action or proceedings so directed would involve the Trustee in personal liability or if the Trustee in good faith shall so determine that the actions or forbearances specified in or pursuant to such direction would be unduly prejudicial to the interests of Holders of the Securities of all series so affected not joining in the giving of said direction, it being understood that (subject to Section 6.01) the Trustee shall have no duty to ascertain whether or not such actions or forbearances are unduly prejudicial to such Holders.

Nothing in this Indenture shall impair the right of the Trustee in its discretion to take any action deemed proper by the Trustee and which is not inconsistent with such direction or directions by Securityholders.

Section 5.10 *Waiver of Past Defaults*. The Holders of a majority in aggregate principal amount of the Securities of such series at the time Outstanding, by notice to the Trustee, may on behalf of the Holders of all the Securities of such series waive any existing default in the performance of any of the covenants contained herein or established pursuant to Section 2.03 with respect to such series and its consequences, except an uncured default in the payment of the principal of, or interest on, any of the Securities of that series as and when the same shall become due by the terms of such Securities; and may rescind an acceleration and its consequences, including any related payment default that resulted from such acceleration. In the case of any such waiver, the Issuer, the Trustee and the Holders of the Securities of such series shall be restored to their former positions and rights hereunder, respectively, such default shall cease to exist and be deemed to have been cured and not to have occurred, and any Event of Default arising therefrom shall be deemed to have been cured, and not to have occurred for every purpose of this Indenture; but no such waiver shall extend to any subsequent or other default or Event of Default or impair any right consequent thereon.

Section 5.11 *Trustee to Give Notice of Default*. The Trustee shall, within 90 days after the occurrence of a default with respect to the Securities of any series, give notice of all defaults with respect to that series known to the Trustee to all Holders of Securities of such series in the manner and to the extent provided in Section 4.03, unless in each case such defaults shall have been cured before the mailing or publication of such notice (the term “**defaults**” for the purpose of this Section being hereby defined to mean any event or condition which is, or with notice or lapse of time or both would become, an Event of Default); *provided*, that, except in the case of default in the payment of the principal of or interest on any of the Securities of such series, or in the payment of any sinking fund installment on such series, the Trustee shall be protected in withholding such notice if and so long as the board of directors, the executive committee, or a trust committee of directors or trustees and/or Responsible Officers of the Trustee in good faith determines that the withholding of such notice is in the interests of the Securityholders of such series.

Section 5.12 *Right of Court to Require Filing of Undertaking to Pay Costs*. All parties to this Indenture agree, and each Holder of any Security by his or her acceptance thereof shall be deemed to have agreed, that any court may in its discretion require, in any suit for the enforcement of any right or remedy under this Indenture or in any suit against the Trustee for any action taken, suffered or omitted by it as Trustee, the filing by any party litigant in such suit of an undertaking to pay the costs of such suit, and that such court may in its discretion assess reasonable costs, including reasonable attorneys’ fees, against any party litigant in such suit, having due regard to the merits and good faith of the claims or defenses made by such party litigant; but the provisions of this Section shall not apply to any suit instituted by the Trustee, to any suit instituted by any Securityholder or group of Securityholders of any series holding in the aggregate more than 10% in aggregate principal amount of the Securities of such series, or to any suit instituted by any Securityholder for the enforcement of the payment of the principal of or interest on any Security of such series, on or after the respective due dates expressed in such Security or established pursuant to this Indenture.

ARTICLE 6
CONCERNING THE TRUSTEE

Section 6.01 *Duties and Responsibilities of the Trustee; During Default; Prior to Default.* With respect to the Holders of any series of Securities issued hereunder, the Trustee, prior to the occurrence of an Event of Default with respect to the Securities of a particular series and after the curing or waiving of all Events of Default which may have occurred with respect to such series, undertakes to perform such duties and only such duties as are specifically set forth in this Indenture. In case an Event of Default with respect to the Securities of a series has occurred (which has not been cured or waived), the Trustee shall exercise such of the rights and powers vested in it by this Indenture, and use the same degree of care and skill in their exercise, as a prudent person would exercise or use under the circumstances in the conduct of his or her own affairs.

No provision of this Indenture shall be construed to relieve the Trustee from liability for its own negligent action, its own negligent failure to act or its own willful misconduct.

Section 6.02 *Certain Rights of the Trustee.* In furtherance of and subject to the Trust Indenture Act of 1939 and subject to Section 6.01:

(a) in the absence of bad faith on the part of the Trustee, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon any statements, certificates or opinions furnished to the Trustee and conforming to the requirements of this Indenture; but, in the case of any such statements, certificates or opinions which by any provision hereof are specifically required to be furnished to the Trustee, the Trustee shall be under a duty to examine the same to determine whether or not they conform to the requirements of this Indenture;

(b) the Trustee shall not be liable for any error of judgment made in good faith by a Responsible Officer or Responsible Officers of the Trustee, unless it shall be proved that the Trustee was negligent in ascertaining the pertinent facts;

(c) the Trustee shall not be liable with respect to any action taken or omitted to be taken by it in good faith in accordance with the direction of the Holders pursuant to Section 5.09 relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, under this Indenture;

(d) none of the provisions contained in this Indenture shall require the Trustee to expend or risk its own funds or otherwise incur personal financial liability in the performance of any of its duties or in the exercise of any of its rights or powers if there shall be reasonable ground for believing that the repayment of such funds or adequate indemnity against such liability is not reasonably assured to it;

(e) the Trustee may rely and shall be protected in acting or refraining from acting upon any resolution, Officer's Certificate or any other certificate, statement, instrument, opinion, report, notice, request, consent, order, bond, debenture, note, security or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties;

(f) any request, direction, order or demand of the Issuer mentioned herein shall be sufficiently evidenced by an Officer's Certificate (unless other evidence in respect thereof be herein specifically prescribed); and any resolution of the Board of Directors may be evidenced to the Trustee by a copy thereof certified by the secretary or an assistant secretary of the Issuer;

(g) the Trustee may consult with counsel and any advice or Opinion of Counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted to be taken by it hereunder in good faith and in accordance with such advice or Opinion of Counsel;

(h) the Trustee shall be under no obligation to exercise any of the trusts or powers vested in it by this Indenture at the request, order or direction of any of the Securityholders pursuant to the provisions of this Indenture, unless such Securityholders shall have offered to the Trustee reasonable security or indemnity against the costs, expenses and liabilities which might be incurred therein or thereby;

(i) the Trustee shall not be liable for any action taken or omitted by it in good faith and believed by it to be authorized or within the discretion, rights or powers conferred upon it by this Indenture;

(j) prior to the occurrence of an Event of Default hereunder and after the curing or waiving of all Events of Default, the Trustee shall not be bound to make any investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, consent, order, approval, appraisal, bond, debenture, note, security, or other paper or document unless requested in writing so to do by the Holders of not less than a majority in aggregate principal amount of the Securities of all series affected then Outstanding; *provided*, that, if the payment within a reasonable time to the Trustee of the costs, expenses or liabilities likely to be incurred by it in the making of such investigation is, in the opinion of the Trustee, not reasonably assured to the Trustee by the security afforded to it by the terms of this Indenture, the Trustee may require reasonable indemnity against such expenses or liabilities as a condition to proceeding; the reasonable expenses of every such investigation shall be paid by the Issuer or, if paid by the Trustee or any predecessor trustee, shall be repaid by the Issuer upon demand; and

(k) the Trustee may execute any of the trusts or powers hereunder or perform any duties hereunder either directly or by or through agents or attorneys not regularly in its employ and the Trustee shall not be responsible for any misconduct or negligence on the part of any such agent or attorney appointed with due care by it hereunder.

Section 6.03 *Trustee Not Responsible for Recitals, Disposition of Securities or Application of Proceeds Thereof*. The recitals contained herein and in the Securities, except the Trustee's certificates of authentication, shall be taken as the statements of the Issuer, and

the Trustee assumes no responsibility for the correctness of the same. The Trustee makes no representation as to the validity or sufficiency of this Indenture or of the Securities. The Trustee shall not be accountable for the use or application by the Issuer of any of the Securities or of the proceeds thereof.

Section 6.04 *Trustee and Agents May Hold Securities; Collections, Etc.* The Trustee or any agent of the Issuer or the Trustee, in its individual or any other capacity, may become the owner or pledgee of Securities with the same rights it would have if it were not the Trustee or such agent and may otherwise deal with the Issuer and receive, collect, hold and retain collections from the Issuer with the same rights it would have if it were not the Trustee or such agent.

Section 6.05 *Moneys Held by Trustee.* Subject to the provisions of Section 10.04 hereof, all moneys received by the Trustee shall, until used or applied as herein provided, be held in trust for the purposes for which they were received, but need not be segregated from other funds except to the extent required by mandatory provisions of law. Neither the Trustee nor any agent of the Issuer or the Trustee shall be under any liability for interest on any moneys received by it hereunder.

Section 6.06 *Compensation and Indemnification of Trustee and Its Prior Claim.* The Issuer covenants and agrees to pay to the Trustee from time to time, and the Trustee shall be entitled to, such reasonable compensation (which shall not be limited by any provision of law in regard to the compensation of a trustee of an express trust) as the Issuer and the Trustee may from time to time agree in writing and, except as otherwise expressly provided herein, the Issuer covenants and agrees to pay or reimburse the Trustee and each predecessor trustee upon its request for all reasonable expenses, disbursements and advances incurred or made by or on behalf of it in accordance with any of the provisions of this Indenture (including the reasonable compensation and the expenses and disbursements of its counsel and of all agents and other persons not regularly in its employ) except any such expense, disbursement or advance as may arise from its negligence or bad faith. The Issuer also covenants to indemnify the Trustee and each predecessor trustee for, and to hold it harmless against, any loss, liability or expense incurred without negligence or bad faith on its part, arising out of or in connection with the acceptance or administration of this Indenture or the trusts hereunder and its duties hereunder, including the costs and expenses of defending itself against or investigating any claim of liability in the premises. The obligations of the Issuer under this Section to compensate and indemnify the Trustee and each predecessor trustee and to pay or reimburse the Trustee and each predecessor trustee for expenses, disbursements and advances shall constitute additional indebtedness hereunder and shall survive the satisfaction and discharge of this Indenture. Such additional indebtedness shall be a senior claim to that of the Securities upon all property and funds held or collected by the Trustee as such, except funds held in trust for the benefit of the Holders of particular Securities, and the Securities are hereby subordinated to such senior claim.

Section 6.07 *Right of Trustee to Rely on Officer's Certificate, Etc.* Subject to Sections 6.01 and 6.02, whenever in the administration of the trusts of this Indenture the Trustee shall deem it necessary or desirable that a matter be proved or established prior to taking or suffering or omitting any action hereunder, such matter (unless other evidence in

respect thereof be herein specifically prescribed) may, in the absence of negligence or bad faith on the part of the Trustee, be deemed to be conclusively proved and established by an Officer's Certificate delivered to the Trustee, and such certificate, in the absence of negligence or bad faith on the part of the Trustee, shall be full warrant to the Trustee for any action taken, suffered or omitted by it under the provisions of this Indenture upon the faith thereof.

Section 6.08 *Disqualification; Conflicting Interests*. If the Trustee has or shall acquire any "conflicting interest" within the meaning of Section 310(b) of the Trust Indenture Act, the Trustee and the Issuer shall in all respects comply with the provisions of Section 310(b) of the Trust Indenture Act.

Section 6.09 *Persons Eligible for Appointment as Trustee*. The Trustee for each series of Securities hereunder shall at all times be a corporation having a combined capital and surplus of at least \$50,000,000 and shall be eligible in accordance with the provisions of Section 310(a) of the Trust Indenture Act of 1939. If such corporation publishes reports of condition at least annually, pursuant to law or to the requirements of a Federal, State or District of Columbia supervising or examining authority, then, for the purposes of this Section, the combined capital and surplus of such corporation shall be deemed to be its combined capital and surplus as set forth in its most recent report of condition so published.

Section 6.10 *Resignation and Removal; Appointment of Successor Trustee*. (a) The Trustee, or any trustee or trustees hereafter appointed, may at any time resign with respect to one or more or all series of Securities by giving written notice of resignation to the Issuer and by mailing notice of such resignation to the Holders of then Outstanding Securities of each series affected at their addresses as they shall appear on the Security register. Upon receiving such notice of resignation, the Issuer shall promptly appoint a successor trustee or trustees with respect to the applicable series by written instrument in duplicate, executed by authority of the Board of Directors, one copy of which instrument shall be delivered to the resigning Trustee and one copy to the successor trustee or trustees. If no successor trustee shall have been so appointed with respect to any series and have accepted appointment within 30 days after the mailing of such notice of resignation, the resigning trustee may petition any court of competent jurisdiction for the appointment of a successor trustee, or any Securityholder who has been a bona fide Holder of a Security or Securities of the applicable series for at least six months may, on behalf of himself or herself and all others similarly situated, petition any such court for the appointment of a successor trustee. Such court may thereupon, after such notice, if any, as it may deem proper and prescribe, appoint a successor trustee.

(b) In case at any time any of the following shall occur:

(i) the Trustee shall fail to comply with the provisions of Section 310(b) of the Trust Indenture Act of 1939 with respect to any series of Securities after written request therefor by the Issuer or by any Securityholder who has been a bona fide Holder of a Security or Securities of such series for at least six months; or

(ii) the Trustee shall cease to be eligible in accordance with the provisions of Section 310(a) of the Trust Indenture Act of 1939 and shall fail to resign after written request therefor by the Issuer or by any Securityholder; or

(iii) the Trustee shall become incapable of acting with respect to any series of Securities, or shall be adjudged bankrupt or insolvent, or a receiver or liquidator of the Trustee or of its property shall be appointed, or any public officer shall take charge or control of the Trustee or of its property or affairs for the purpose of rehabilitation, conservation or liquidation;

then, in any such case, (A) the Issuer may remove the Trustee with respect to the applicable series of Securities and appoint a successor trustee for such series by written instrument, in duplicate, executed by order of the Board of Directors, one copy of which instrument shall be delivered to the Trustee so removed and one copy to the successor trustee, or, (B) subject to Section 315(e) of the Trust Indenture Act of 1939, any Securityholder who has been a bona fide Holder of a Security or Securities of such series for at least six months may on behalf of himself or herself and all others similarly situated, petition any court of competent jurisdiction for the removal of the Trustee and the appointment of a successor trustee with respect to such series. Such court may thereupon, after such notice, if any, as it may deem proper and prescribe, remove the Trustee and appoint a successor trustee.

(c) The Holders of a majority in aggregate principal amount of the Securities of each series at the time Outstanding may at any time remove the Trustee with respect to Securities of such series and, with the consent of the Issuer, appoint a successor trustee with respect to the Securities of such series by delivering to the Trustee so removed, to the successor trustee so appointed and to the Issuer the evidence provided for in Section 7.01 of the action in that regard taken by the Securityholders.

(d) Any resignation or removal of the Trustee with respect to any series and any appointment of a successor trustee with respect to such series pursuant to any of the provisions of this Section 6.10 shall become effective upon acceptance of appointment by the successor trustee as provided in Section 6.11.

Section 6.11 *Acceptance of Appointment by Successor Trustee.* Any successor trustee appointed as provided in Section 6.10 shall execute and deliver to the Issuer and to its predecessor trustee an instrument accepting such appointment hereunder, and thereupon the resignation or removal of the predecessor trustee with respect to all or any applicable series shall become effective and such successor trustee, without any further act, deed or conveyance, shall become vested with all rights, powers, duties and obligations with respect to such series of its predecessor hereunder, with like effect as if originally named as trustee for such series hereunder; but, nevertheless, on the written request of the Issuer or of the successor trustee, upon payment of its charges then unpaid, the trustee ceasing to act shall, subject to Section 10.04, pay over to the successor trustee all moneys at the time held by it hereunder and shall execute and deliver an instrument transferring to such successor trustee all such rights, powers, duties and obligations. Upon request of any such successor trustee, the Issuer shall execute any and all instruments in writing for more fully and certainly vesting

in and confirming to such successor trustee all such rights and powers. Any trustee ceasing to act shall, nevertheless, retain a prior claim upon all property or funds held or collected by such trustee to secure any amounts then due it pursuant to the provisions of Section 6.06.

If a successor trustee is appointed with respect to the Securities of one or more (but not all) series, the Issuer, the predecessor trustee and each successor trustee with respect to the Securities of any applicable series shall execute and deliver an indenture supplemental hereto which shall contain such provisions as shall be deemed necessary or desirable to confirm that all the rights, powers, trusts and duties of the predecessor trustee with respect to the Securities of any series as to which the predecessor trustee is not retiring shall continue to be vested in the predecessor trustee, and shall add to or change any of the provisions of this Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one trustee, it being understood that nothing herein or in such supplemental indenture shall constitute such trustees co-trustees of the same trust and that each such trustee shall be trustee of a trust or trusts under separate indentures.

No successor trustee with respect to any series of Securities shall accept appointment as provided in this Section 6.11 unless at the time of such acceptance such successor trustee shall be qualified under the provisions of Section 310(b) of the Trust Indenture Act of 1939 and eligible under the provisions of Section 310(a) of the Trust Indenture Act of 1939.

Upon acceptance of appointment by any successor trustee as provided in this Section 6.11, the Issuer shall mail notice thereof to the Holders of Securities of each series affected, by mailing such notice to such Holders at their addresses as they shall appear on the Security register. If the acceptance of appointment is substantially contemporaneous with the resignation, then the notice called for by the preceding sentence may be combined with the notice called for by Section 6.10. If the Issuer fails to mail such notice within ten days after acceptance of appointment by the successor trustee, the successor trustee shall cause such notice to be given at the expense of the Issuer.

Section 6.12 *Merger, Conversion, Consolidation or Succession to Business of Trustee.* Any corporation into which the Trustee may be merged or converted or with which it may be consolidated, or any corporation resulting from any merger, conversion or consolidation to which the Trustee shall be a party, or any corporation succeeding to the corporate trust business of the Trustee, shall be the successor of the Trustee hereunder; *provided*, that such corporation shall be qualified under the provisions of Section 310(b) of the Trust Indenture Act of 1939 and eligible under the provisions of Section 310(a) of the Trust Indenture Act of 1939, without the execution or filing of any paper or any further act on the part of any of the parties hereto, anything herein to the contrary notwithstanding.

In case, at the time such successor to the Trustee shall succeed to the trusts created by this Indenture, any of the Securities of any series shall have been authenticated but not delivered, any such successor to the Trustee may adopt the certificate of authentication of any predecessor trustee and deliver such Securities so authenticated; and, in case at that time any of the Securities of any series shall not have been authenticated, any successor to the Trustee may authenticate such Securities either in the name of any predecessor hereunder or in the name of the successor trustee; and in all such cases such certificate shall have the full force which it is anywhere in the

Securities of such series or in this Indenture provided that the certificate of the Trustee shall have; *provided*, that the right to adopt the certificate of authentication of any predecessor trustee or to authenticate Securities of any series in the name of any predecessor trustee shall apply only to its successor or successors by merger, conversion or consolidation.

Section 6.13 *Preferential Collection of Claims Against the Issuer*. The Trustee shall comply with Section 311(a) of the Trust Indenture Act, excluding any creditor relationship described in Section 311(b) of the Trust Indenture Act. A Trustee who has resigned or been removed shall be subject to Section 311(a) of the Trust Indenture Act to the extent included therein.

ARTICLE 7
CONCERNING THE SECURITYHOLDERS

Section 7.01 *Evidence of Action Taken by Securityholders*. Any request, demand, authorization, direction, notice, consent, waiver or other action provided by this Indenture to be given or taken by a specified percentage in principal amount of the Securityholders of any or all series may be embodied in and evidenced by one or more instruments of substantially similar tenor signed by such specified percentage of Securityholders in person or by agent duly appointed in writing; and, except as herein otherwise expressly provided, such action shall become effective when such instrument or instruments are delivered to the Trustee. Proof of execution of any instrument or of a writing appointing any such agent shall be sufficient for any purpose of this Indenture and (subject to Sections 6.01 and 6.02) conclusive in favor of the Trustee and the Issuer, if made in the manner provided in this Article.

Section 7.02 *Proof of Execution of Instruments and of Holding of Securities*. Subject to Sections 6.01 and 6.02, the execution of any instrument by a Holder or his agent or proxy may be proved in accordance with such reasonable rules and regulations as may be prescribed by the Trustee or in such manner as shall be satisfactory to the Trustee. The holding of Securities shall be proved by the Security register or by a certificate of the registrar thereof. The Issuer may set a record date for purposes of determining the identity of Holders of any series entitled to vote or consent to any action referred to in Section 7.01, which record date may be set at any time or from time to time by notice to the Trustee, for any date or dates (in the case of any adjournment or reconsideration) not more than 60 days nor less than five days prior to the proposed date of such vote or consent, and thereafter, notwithstanding any other provisions hereof, only Holders of such series of record on such record date shall be entitled to so vote or give such consent or revoke such vote or consent. Notice of such record date may be given before or after any request for any action referred to in Section 7.01 is made by the Issuer.

Section 7.03 *Holders to Be Treated as Owners*. The Issuer, the Trustee and any agent of the Issuer or of the Trustee may deem and treat the Person in whose name any Security shall be registered upon the Security register for such series as the absolute owner of such Security (whether or not such Security shall be overdue and notwithstanding any notation of ownership or other writing thereon) for the purpose of receiving payment of or on account of the principal of, and, subject to the provisions of this Indenture, interest on, such

Security and for all other purposes; and neither the Issuer nor the Trustee nor any agent of the Issuer or the Trustee shall be affected by any notice to the contrary. All such payments so made to any such Person, or upon his or her order, shall be valid, and, to the extent of the sum or sums so paid, effectual to satisfy and discharge the liability for moneys payable.

Section 7.04 *Securities Owned by Issuer Deemed Not Outstanding*. In determining whether the Holders of the requisite aggregate principal amount of Outstanding Securities of any or all series have concurred in any direction, consent or waiver under this Indenture, Securities which are owned by the Issuer or any other obligor on the Securities with respect to which such determination is being made or by any Person directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer or any other obligor on the Securities with respect to which such determination is being made shall be disregarded and deemed not to be Outstanding for the purpose of any such determination, except that, for the purpose of determining whether the Trustee shall be protected in relying on any such direction, consent or waiver, only Securities which the Trustee knows are so owned shall be so disregarded. Securities so owned which have been pledged in good faith may be regarded as Outstanding if the pledgee establishes to the satisfaction of the Trustee the pledgee's right so to act with respect to such Securities and that the pledgee is not the Issuer or any other obligor upon the Securities or any Person directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer or any other obligor on the Securities. In case of a dispute as to such right, the advice of counsel shall be full protection in respect of any decision made by the Trustee in accordance with such advice.

Section 7.05 *Right of Revocation of Action Taken*. At any time prior to (but not after) the evidencing to the Trustee, as provided in Section 7.01, of the taking of any action by the Holders of the percentage in aggregate principal amount of the Securities of any or all series, as the case may be, specified in this Indenture in connection with such action, any Holder of a Security the serial number of which is shown by the evidence to be included among the serial numbers of the Securities the Holders of which have consented to such action may, by filing written notice at the Corporate Trust Office and upon proof of holding as provided in this Article, revoke such action so far as concerns such Security. Except as aforesaid, any such action taken by the Holder of any Security shall be conclusive and binding upon such Holder and upon all future Holders and owners of such Security and of any Securities issued in exchange or substitution therefor or on registration of transfer thereof, irrespective of whether or not any notation in regard thereto is made upon any such Security. Any action taken by the Holders of the percentage in aggregate principal amount of the Securities of any or all series, as the case may be, specified in this Indenture in connection with such action shall be conclusively binding upon the Issuer, the Trustee and the Holders of all the Securities affected by such action.

ARTICLE 8 SUPPLEMENTAL INDENTURES

Section 8.01 *Supplemental Indentures Without Consent of Securityholders*. The Issuer, when authorized by a resolution of its Board of Directors, and the Trustee may from time to time and at any time, without the consent of any of the Securityholders, enter into an indenture or indentures supplemental hereto in form satisfactory to the Trustee for one or more of the following purposes:

- (a) to convey, transfer, assign, mortgage or pledge to the Trustee as security for the Securities of one or more series any property or assets;

(b) to evidence the succession of a corporation, limited liability company, partnership or trust to the Issuer, or successive successions, and the assumption by such successor of the covenants, agreements and obligations of the Issuer pursuant to, or to otherwise comply with, Article 9;

(c) to comply with the requirements of the Commission in order to effect or maintain the qualification of this Indenture under the Trust Indenture Act of 1939, as amended;

(d) to add to the covenants of the Issuer such further covenants, restrictions, conditions or provisions as its Board of Directors and the Trustee shall consider to be for the protection of the Holders of Securities, and to make the occurrence, or the occurrence and continuance, of a default in any such additional covenants, restrictions, conditions or provisions an Event of Default permitting the enforcement of all or any of the several remedies provided in this Indenture as herein set forth; *provided*, that in respect of any such additional covenant, restriction, condition or provision such supplemental indenture may provide for a particular period of grace after default (which period may be shorter or longer than that allowed in the case of other defaults) or may provide for an immediate enforcement upon such an Event of Default or may limit the remedies available to the Trustee upon such an Event of Default or may limit the right of the Holders of a majority in aggregate principal amount of the Securities of such series to waive such an Event of Default;

(e) to cure any ambiguity, defect or inconsistency, or to conform this Indenture or any supplemental indenture to the description of the Securities set forth in any prospectus or prospectus supplement related to such series of Securities;

(f) to provide for or add guarantors for the Securities of one or more series;

(g) to establish the form or terms of Securities of any series as permitted by Sections 2.01 and 2.03;

(h) to evidence and provide for the acceptance of appointment hereunder by a successor trustee with respect to the Securities of one or more series and to add to or change any of the provisions of this Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one trustee, pursuant to the requirements of Section 6.11;

(i) to add to, delete from or revise the conditions, limitations and restrictions on the authorized amount, terms, purposes of issue, authentication and delivery of any series of Securities, as herein set forth;

(j) to make any change to the Securities of any series so long as no Securities of such series are Outstanding; and

(k) to make any other change that does not adversely affect the interests of the Holders of the Securities in any material respect.

The Trustee shall join with the Issuer in the execution of any such supplemental indenture, to make any further appropriate agreements and stipulations which may be therein contained and to accept the conveyance, transfer, assignment, mortgage or pledge of any property thereunder, but the Trustee shall not be obligated to enter into any such supplemental indenture which affects the Trustee's own rights, duties or immunities under this Indenture or otherwise.

Any supplemental indenture authorized by the provisions of this Section may be executed without the consent of the Holders of any of the Securities at the time Outstanding, notwithstanding any of the provisions of Section 8.02.

Section 8.02 *Supplemental Indentures With Consent of Securityholders*. With the consent (evidenced as provided in Article 7) of the Holders of not less than a majority in aggregate principal amount of the Securities at the time Outstanding of one or more series affected by such supplemental indenture (voting as separate series), the Issuer, when authorized by a resolution of the Board of Directors, and the Trustee may, from time to time and at any time, enter into an indenture or indentures supplemental hereto for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of this Indenture or of any supplemental indenture or of modifying in any manner the rights of the Holders of the Securities of each such consenting series; *provided*, that no such supplemental indenture shall, without the consent of the Holder of each Security so affected, (a) extend the final maturity of any Security, or reduce the principal amount thereof, or reduce the rate or extend the time of payment of interest thereon, or reduce any amount payable on redemption thereof, or make the principal thereof (including any amount in respect of original issue discount) or interest thereon payable in any currency other than that provided in the Securities or in accordance with the terms thereof, or reduce the amount of the principal of an Original Issue Discount Security that would be due and payable upon an acceleration of the maturity thereof pursuant to Section 5.01 or the amount thereof provable in bankruptcy pursuant to Section 5.02, or (b) waive an uncured default in the payment of principal of any Security or interest thereon (except in the case of a rescission of acceleration of the Securities of such series by the Holders of at least a majority in aggregate principal amount of the Securities of such series at the time Outstanding and a waiver of the payment default that resulted from such acceleration) or change a provision related to the waiver of past defaults or changes or impair the right of any Securityholder to institute suit for the payment or conversion thereof or, if the Securities provide therefor, any right of repayment at the option of the Securityholder, or (c) modify any of the provisions of this section except to increase any required percentage or to provide that certain other provisions cannot be modified or waived without the consent of the Holder of each Security so affected, or (d) reduce the aforesaid percentage of Securities of any series, the consent of the Holders of which is required for any such supplemental indenture or the consent of Holders of which is required for any modification, amendment or waiver of compliance with certain provisions of this Indenture or certain defaults hereunder and their consequences provided for in this Indenture.

A supplemental indenture which changes or eliminates any covenant, Event of Default or other provision of this Indenture (1) that has been expressly included solely for the benefit of one or more particular series of Securities, if any, or (2) which modifies the rights of Holders of Securities of one or more series with respect to any covenant, Event of Default or provision, shall be deemed not to affect the rights under this Indenture of the Holders of Securities of any other series with respect to which such covenant, Event of Default or other provision has not been included or so modified.

Upon the request of the Issuer, accompanied by a Board Resolution authorizing the execution of any such supplemental indenture, and upon the filing with the Trustee of evidence of the consent of Securityholders as aforesaid and other documents, if any, required by Section 7.01, the Trustee shall join with the Issuer in the execution of such supplemental indenture unless such supplemental indenture affects the Trustee's own rights, duties or immunities under this Indenture or otherwise, in which case the Trustee may in its discretion, but shall not be obligated to, enter into such supplemental indenture.

It shall not be necessary for the consent of the Securityholders under this Section to approve the particular form of any proposed supplemental indenture, but it shall be sufficient if such consent shall approve the substance thereof.

Promptly after the execution by the Issuer and the Trustee of any supplemental indenture pursuant to the provisions of this Section, the Trustee shall give a notice thereof to the Holders of then Outstanding Securities of each series affected thereby, by mailing a notice thereof by first-class mail to such Holders at their addresses as they shall appear on the Security register, and in each case such notice shall set forth in general terms the substance of such supplemental indenture. Any failure of the Trustee to mail such notice, or any defect therein, shall not, however, in any way impair or affect the validity of any such supplemental indenture.

Section 8.03 *Effect of Supplemental Indenture.* Upon the execution of any supplemental indenture pursuant to the provisions hereof, this Indenture shall be and be deemed to be modified and amended in accordance therewith and the respective rights, limitations of rights, obligations, duties and immunities under this Indenture of the Trustee, the Issuer and the Holders of Securities of each series affected thereby shall thereafter be determined, exercised and enforced hereunder subject in all respects to such modifications and amendments, and all the terms and conditions of any such supplemental indenture shall be and be deemed to be part of the terms and conditions of this Indenture for any and all purposes.

Section 8.04 *Documents to Be Given to Trustee.* The Trustee, subject to the provisions of Sections 6.01 and 6.02, may receive an Officer's Certificate and an Opinion of Counsel as conclusive evidence that any supplemental indenture executed pursuant to this Article 8 complies with the applicable provisions of this Indenture.

Section 8.05 *Notation on Securities in Respect of Supplemental Indentures*. Securities of any series authenticated and delivered after the execution of any supplemental indenture pursuant to the provisions of this Article may bear a notation in form approved by the Trustee for such series as to any matter provided for by such supplemental indenture or as to any action taken by Securityholders. If the Issuer or the Trustee shall so determine, new Securities of any series so modified as to conform, in the opinion of the Trustee and the Board of Directors, to any modification of this Indenture contained in any such supplemental indenture may be prepared by the Issuer, authenticated by the Trustee and delivered in exchange for the Securities of such series then Outstanding.

ARTICLE 9
CONSOLIDATION, MERGER, SALE OR CONVEYANCE

Section 9.01 *Issuer May Consolidate, Etc., on Certain Terms*. The Issuer shall not consolidate with or merge into any other Person (in a transaction in which the Issuer is not the surviving corporation) or convey, transfer or lease its properties and assets substantially as an entirety to any Person, unless (a) the Person formed by such consolidation or into which the Issuer is merged or the Person which acquires by conveyance or transfer, or which leases, the properties and assets of the Issuer substantially as an entirety (i) shall be a corporation, limited liability company, partnership or trust, (ii) shall be organized and validly existing under the laws of the United States of America, any State thereof or the District of Columbia and (iii) shall expressly assume, by an indenture supplemental hereto, executed and delivered to the Trustee, in form satisfactory to the Trustee, the due and punctual payment of the principal of and interest on all the Securities and the performance or observance of every covenant of this Indenture on the part of the Issuer to be performed, by supplemental indenture satisfactory in form to the Trustee, executed and delivered to the Trustee, by the Person formed by such consolidation or into which the Issuer shall have been merged or by the Person which shall have acquired the Issuer's assets; (b) immediately after giving effect to such transaction, no Event of Default, and no event which, after notice or lapse of time or both, would become an Event of Default, shall have happened and be continuing; and (c) the Issuer has delivered to the Trustee an Officer's Certificate and an Opinion of Counsel, each stating that such consolidation, merger, conveyance, transfer or lease and, if a supplemental indenture is required in connection with such transaction, such supplemental indenture comply with this Article and that all conditions precedent herein provided for relating to such transaction have been complied with.

The conditions of (a)(ii) above shall not apply in the case of a corporation or entity not organized under the laws of the United States of America, any State thereof or the District of Columbia which shall agree, in form satisfactory to the Trustee, (i) to subject itself to the jurisdiction of the United States district court for the Southern District of New York and (ii) to indemnify and hold harmless the holders of all Securities against (A) any tax, assessment or governmental charge imposed on such holders by a jurisdiction other than the United States or any political subdivision or taxing authority thereof or therein with respect to, and withheld on the making of, any payment of principal or interest on such Securities and which would not have been so imposed and withheld had such consolidation, merger, sale or conveyance not been made and (B) any tax, assessment or governmental charge imposed on or relating to, and any costs or expenses involved in, such consolidation, merger, sale or conveyance.

The restrictions in this Section 9.01 shall not apply to (i) the merger or consolidation of the Issuer with one of its affiliates, if the Board of Directors determines in good faith that the purpose of such transaction is principally to change the Issuer's State of incorporation or convert the Issuer's form of organization to another form, or (ii) the merger of the Issuer with or into a single direct or indirect wholly owned Subsidiary.

Nothing contained in this Article shall apply to, limit or impose any requirements upon the consolidation or merger of any Person into the Issuer where the Issuer is the survivor of such transaction, or the acquisition by the Issuer, by purchase or otherwise, of all or any part of the property of any other Person (whether or not affiliated with the Issuer).

Section 9.02 *Successor Issuer Substituted*. Upon any consolidation of the Issuer with, or merger of the Issuer into, any other Person or any conveyance, transfer or lease of the properties and assets of the Issuer substantially as an entirety in accordance with Section 9.01, the successor Person formed by such consolidation or into which the Issuer is merged or to which such conveyance, transfer or lease is made shall succeed to, and be substituted for, and may exercise every right and power of, the Issuer under this Indenture with the same effect as if such successor Person had been named as the Issuer herein, and thereafter, except in the case of a lease, the predecessor Person shall be relieved of all obligations and covenants under this Indenture and the Securities.

In case of any such consolidation, merger, sale, lease or conveyance, such changes in phraseology and form (but not in substance) may be made in the Securities thereafter to be issued as may be appropriate.

ARTICLE 10
SATISFACTION AND DISCHARGE OF INDENTURE; DEFEASANCE; UNCLAIMED MONEYS

Section 10.01 *Satisfaction and Discharge of Indenture; Defeasance*. (a) If at any time

(i) the Issuer shall have paid or caused to be paid the principal of and interest on all the Securities of any series Outstanding hereunder (other than Securities of such series which have been destroyed, lost or stolen and which have been replaced or paid as provided in Section 2.09) as and when the same shall have become due and payable, or

(ii) the Issuer shall have delivered to the Trustee for cancellation all Securities of any series theretofore authenticated (other than any Securities of such series which shall have been destroyed, lost or stolen and which shall have been replaced or paid as provided in Section 2.09) or

(iii) in the case of any series of Securities the exact amount (including the currency of payment) of principal of and interest due on which on the dates referred to in clause (B) below can be determined at the time of making the deposit referred to in such clause,

(A) all the Securities of such series not theretofore delivered to the Trustee for cancellation shall have become due and payable, or are by their terms to become due and payable within one year or are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice of redemption, and

(B) the Issuer shall have irrevocably deposited or caused to be deposited with the Trustee as trust funds the entire amount in cash (other than moneys repaid by the Trustee or any paying agent to the Issuer in accordance with Section 10.04) or, in the case of any series of Securities the payments on which may only be made in Dollars, U.S. Government Obligations maturing as to principal and interest in such amounts and at such times as will insure the availability of cash sufficient to pay on any subsequent interest payment date all interest due on such interest payment date on the Securities of such series and to pay at maturity or upon redemption all Securities of such series (in each case other than any Securities of such series which shall have been destroyed, lost or stolen and which shall have been replaced or paid as provided in Section 2.09) not theretofore delivered to the Trustee for cancellation, including principal and interest due or to become due to such date of maturity, as the case may be,

and if, in any such case (i), (ii) or (iii), the Issuer shall also pay or cause to be paid all other sums payable hereunder by the Issuer, including amounts due the Trustee pursuant to Section 6.06, with respect to Securities of such series, then this Indenture shall cease to be of further effect with respect to Securities of such series (except as to (1) rights of registration of transfer, conversion and exchange of Securities of such series and the Issuer's right of optional redemption, (2) substitution of mutilated, defaced, destroyed, lost or stolen Securities, (3) rights of Holders of Securities to receive, solely from the trust fund described in Section 10.01(a)(iii)(B), payments of principal thereof and interest thereon, upon the original stated due dates therefor (but not upon acceleration) and remaining rights of the Holders to receive, solely from the trust fund described in Section 10.01(a)(iii)(B), sinking fund payments, if any, (4) the rights (including the Trustee's rights under Section 10.05) and immunities of the Trustee hereunder and the Trustee's obligations under Sections 10.02 and 10.04 and (5) the obligations of the Issuer under Section 3.02), and the Trustee, on demand of the Issuer accompanied by an Officer's Certificate and an Opinion of Counsel which complies with Section 11.05 and at the cost and expense of the Issuer, shall execute proper instruments acknowledging such satisfaction of and discharging this Indenture with respect to such series. The Issuer agrees to reimburse the Trustee for any costs or expenses thereafter reasonably and properly incurred and to compensate the Trustee for any services thereafter reasonably and properly rendered by the Trustee in connection with this Indenture or the Securities of such series.

(b) The following subsection shall apply to the Securities of each series unless specifically otherwise provided in a Board Resolution, Officer's Certificate or indenture supplemental hereto provided pursuant to Section 2.03. In addition to the right to discharge of the Indenture pursuant to subsection (a) above, the Issuer, at its option and at any time, by written notice by an officer delivered to the Trustee, may elect to have all of its obligations

discharged with all Outstanding Securities of a series ("**Legal Defeasance**"), such discharge to be effective on the date that the conditions set forth in clauses (i) through (iv) and (vi) of Section 10.01(d) are satisfied, and thereafter the Issuer shall be deemed to have paid and discharged the entire Debt on all the Securities of such a series, and satisfied all its other obligations under such Securities and this Indenture insofar as such Securities are concerned and this Indenture shall cease to be of further effect with respect to Securities of such series (except as to (1) rights of registration of transfer, conversion and exchange of Securities of such series, (2) substitution of apparently mutilated, defaced, destroyed, lost or stolen Securities, (3) rights of Holders of Securities to receive, solely from the trust fund described in Section 10.01(d)(i), payments of principal thereof and interest thereon, upon the original stated due dates therefor (but not upon acceleration) and remaining rights of the Holders to receive, solely from the trust fund described in Section 10.01(d)(i), sinking fund payments, if any, (4) the rights (including the Trustee's rights under Section 10.05) and immunities of the Trustee hereunder and the Trustee's obligations with respect to the Securities of such series under Sections 10.02 and 10.04 and (5) the obligations of the Issuer under Section 3.02).

(c) The following subsection shall apply to the Securities of each series unless specifically otherwise provided in a Board Resolution, Officer's Certificate or indenture supplemental hereto provided pursuant to Section 2.03. In addition to the right to discharge of the Indenture pursuant to subsection (a) and to Legal Defeasance pursuant to subsection (b), above, the Issuer, at its option and at any time, by written notice executed by an officer delivered to the Trustee, may elect to have its obligations under any covenant contained in this Indenture or in the Board Resolution or supplemental indenture relating to such series pursuant to Section 2.03 discharged with respect to all Outstanding Securities of a series, this Indenture and any indentures supplemental to this Indenture with respect to such series ("**Covenant Defeasance**"), such discharge to be effective on the date the conditions set forth in clauses (i) through (iii) and (v) through (vi) of Section 10.01(d) are satisfied, and such Securities shall thereafter be deemed to be not "Outstanding" for the purposes of any direction, waiver, consent or declaration of Securityholders (and the consequences of any thereof) in connection with such covenants, but shall continue to be "Outstanding" for all other purposes under this Indenture. For this purpose, such Covenant Defeasance means that, with respect to the Outstanding Securities of a series, the Issuer may omit to comply with and shall have no liability in respect of any term, condition or limitation set forth in any such covenant, whether directly or indirectly, by reason of any reference elsewhere herein to any such covenant or by reason of reference in any such covenant to any other provision herein or in any other document and such omission to comply shall not constitute an Event of Default under Section 5.01(c) or otherwise, but except as specified in this Section 10.01(c), the remainder of the Issuer's obligations under the Securities of such series, this Indenture, and any indentures supplemental to this Indenture with respect to such series shall be unaffected thereby.

(d) The following shall be the conditions to the application of Legal Defeasance under subsection (b) or Covenant Defeasance under subsection (c) to the Securities of the applicable series:

(i) the Issuer irrevocably deposits or causes to be deposited in trust with the Trustee or, at the option of the Trustee, with a trustee satisfactory to the Trustee and the Company under the terms of an irrevocable trust agreement in

form and substance satisfactory to the Trustee, cash or U.S. Government Obligations that will generate cash sufficient to pay principal of and interest on the Outstanding Securities of such series to maturity or redemption, as the case may be, and to pay all other amounts payable by it hereunder, provided that (A) the trustee of the irrevocable trust, if any, shall have been irrevocably instructed to pay such funds or the proceeds of such U.S. Government Obligations to the Trustee and (B) the Trustee shall have been irrevocably instructed to apply such funds or the proceeds of such U.S. Government Obligations to (x) the principal and interest on all Securities of such series on the date that such principal or interest is due and payable and (y) any mandatory sinking fund payments on the day on which such payments are due and payable in accordance with the terms of the Indenture and the Securities of such series, and the Issuer shall also pay or cause to be paid all other amounts payable hereunder with respect to such series;

(ii) the Issuer delivers to the Trustee an Officer's Certificate stating that all conditions precedent specified herein relating to Legal Defeasance or Covenant Defeasance, as the case may be, have been complied with, and an Opinion of Counsel to the same effect;

(iii) no Event of Default under subsection (a), (b), (d) or (e) of Section 5.01 shall have occurred and be continuing, and no event which with notice or lapse of time or both would become such an Event of Default shall have occurred and be continuing, on the date of such deposit;

(iv) in the event of an election for Legal Defeasance under subsection (b), the Issuer shall have delivered to the Trustee an Opinion of Counsel stating that (A) the Issuer has received from, or there has been published by, the Internal Revenue Service a ruling or (B) since the date of this instrument, there has been a change in the applicable Federal income tax law, in either case (A) or (B) to the effect that, and based thereon such opinion shall confirm that, the Holders of such Securities will not recognize gain or loss for Federal income tax purposes as a result of the deposit, defeasance and discharge to be effected with respect to such Securities and will be subject to Federal income tax on the same amounts, in the same manner and at the same times as would be the case if such deposit, defeasance and discharge were not to occur;

(v) in the event of an election for Covenant Defeasance under subsection (c), the Issuer shall have delivered to the Trustee an Opinion of Counsel to the effect that the Holders of such Securities will not recognize gain or loss for Federal income tax purposes as a result of the deposit and Covenant Defeasance to be effected with respect to such Securities and will be subject to Federal income tax on the same amount, in the same manner and at the same times as would be the case if such deposit and Covenant Defeasance were not to occur; and

(vi) notwithstanding any other provisions of this subsection (d), such defeasance shall be effected in compliance with any additional or substitute terms, conditions or limitations which may be imposed on the Issuer pursuant to Section 2.03.

After such irrevocable deposit made pursuant to this Section 10.01(d) and satisfaction of the other conditions set forth in this subsection (d), the Trustee upon request shall execute proper instruments acknowledging the discharge of the Issuer's obligations pursuant to this Section 10.01.

Section 10.02 *Application by Trustee of Funds Deposited for Payment of Securities.* Subject to Section 10.04, all moneys deposited with the Trustee (or other trustee) pursuant to Section 10.01 shall be held in trust and applied by it to the payment, either directly or through any paying agent (including the Issuer acting as its own paying agent), to the Holders of the particular Securities of such series for the payment or redemption of which such moneys have been deposited with the Trustee, of all sums due and to become due thereon for principal and interest; but such money need not be segregated from other funds except to the extent required by law.

Section 10.03 *Repayment of Moneys Held by Paying Agent.* In connection with the satisfaction and discharge of this Indenture with respect to Securities of any series, all moneys then held by any paying agent under the provisions of this Indenture with respect to such series of Securities shall, upon demand of the Issuer, be repaid to it or paid to the Trustee and thereupon such paying agent shall be released from all further liability with respect to such moneys.

Section 10.04 *Return of Moneys Held by Trustee and Paying Agent Unclaimed for Two Years.* Any moneys deposited with or paid to the Trustee or any paying agent for the payment of the principal of, interest on or additional amounts in respect of any Security of any series and not applied but remaining unclaimed for two years after the date upon which such principal, interest or additional amount shall have become due and payable, shall be repaid to the Issuer by the Trustee for such series or such paying agent, and the Holder of the Securities of such series shall thereafter look only to the Issuer for any payment which such Holder may be entitled to collect, and all liability of the Trustee or any paying agent with respect to such moneys shall thereupon cease.

Section 10.05 *Indemnity for U.S. Government Obligations.* The Issuer shall pay and indemnify the Trustee against any tax, fee or other charge imposed on or assessed against the U.S. Government Obligations deposited pursuant to Section 10.01 or the principal or interest received in respect of such obligations.

ARTICLE 11 MISCELLANEOUS PROVISIONS

Section 11.01 *No Recourse.* No recourse under or upon any obligation, covenant or agreement of this Indenture, or of any Security, or for any claim based thereon or otherwise in respect thereof, shall be had against any incorporator, stockholder, officer or

director, past, present or future as such, of the Issuer or of any predecessor or successor corporation, either directly or through the Issuer or any such predecessor or successor corporation, whether by virtue of any constitution, statute or rule of law, or by the enforcement of any assessment or penalty or otherwise; it being expressly understood that this Indenture and the obligations issued hereunder are solely corporate obligations, and that no such personal liability whatever shall attach to, or is or shall be incurred by, the incorporators, stockholders, officers or directors as such, of the Issuer or of any predecessor or successor corporation, or any of them, because of the creation of the indebtedness hereby authorized, or under or by reason of the obligations, covenants or agreements contained in this Indenture or in any of the Securities or implied therefrom; and that any and all such personal liability of every name and nature, either at common law or in equity or by constitution or statute, of, and any and all such rights and claims against, every such incorporator, stockholder, officer or director as such, because of the creation of the indebtedness hereby authorized, or under or by reason of the obligations, covenants or agreements contained in this Indenture or in any of the Securities or implied therefrom, are hereby expressly waived and released as a condition of, and as a consideration for, the execution of this Indenture and the issuance of such Securities.

Section 11.02 *Provisions of Indenture for the Sole Benefit of Parties and Holders of Securities.* Nothing in this Indenture or in the Securities, expressed or implied, shall give or be construed to give to any person, firm or corporation, other than the parties hereto and their successors and the Holders of the Securities any legal or equitable right, remedy or claim under this Indenture or under any covenant or provision herein contained, all such covenants and provisions being for the sole benefit of the parties hereto and their successors and of the Holders of the Securities.

Section 11.03 *Successors and Assigns of Issuer Bound by Indenture.* All the covenants, stipulations, promises and agreements contained in this Indenture by or on behalf of the Issuer shall bind its successors and assigns, whether so expressed or not.

Section 11.04 *Notices and Demands on Issuer, Trustee and Holders of Securities.* Any notice or demand which by any provision of this Indenture is required or permitted to be given or served by the Trustee or by the Holders of Securities to or on the Issuer may be given or served by being deposited postage prepaid, first-class mail (except as otherwise specifically provided herein) addressed (until another address of the Issuer is filed by the Issuer with the Trustee) to Tetrphase Pharmaceuticals, Inc., 480 Arsenal Street, Suite 110 Watertown, MA 02472, Attn: Chief Financial Officer. Any notice, direction, request or demand by the Issuer or any Holder of Securities to or upon the Trustee shall be deemed to have been sufficiently given or made, for all purposes, if given or made at _____, _____, Attn: _____.

Where this Indenture provides for notice to Holders of Securities, such notice shall be sufficiently given (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid, to each Holder entitled thereto, at his or her last address as it appears in the Security register. In case, by reason of the suspension of or irregularities in regular mail service, it shall be impracticable to mail notice of any event to Holders of Securities when said notice is required to be given pursuant to any provision of this Indenture or of the Securities, then any manner of giving such notice as shall be satisfactory to the Trustee shall be deemed to be a sufficient giving of such notice.

In case, by reason of the suspension of or irregularities in regular mail service, it shall be impracticable to mail notice to the Issuer when such notice is required to be given pursuant to any provision of this Indenture, then any manner of giving such notice as shall be satisfactory to the Trustee shall be deemed to be a sufficient giving of such notice.

Neither the failure to give notice, nor any defect in any notice so given, to any particular Holder of a Security shall affect the sufficiency of such notice with respect to other Holders of Securities given as provided above.

Where this Indenture provides for notice in any manner, such notice may be waived in writing by the Person entitled to receive such notice either before or after the event, and such waiver shall be the equivalent of such notice. Waivers of notice by Holders shall be filed with the Trustee, but such filing shall not be a condition precedent to the validity of any action taken in reliance upon such waiver.

Section 11.05 *Officer's Certificates and Opinions of Counsel; Statements to Be Contained Therein*. Upon any application or demand by the Issuer to the Trustee to take any action under any of the provisions of this Indenture, the Issuer shall furnish to the Trustee an Officer's Certificate stating that all conditions precedent provided for in this Indenture relating to the proposed action have been complied with and an Opinion of Counsel stating that in the opinion of such counsel all such conditions precedent have been complied with, except that in the case of any such application or demand as to which the furnishing of such documents is specifically required by any provision of this Indenture relating to such particular application or demand, no additional certificate or opinion need be furnished.

Each certificate or opinion provided for in this Indenture and delivered to the Trustee with respect to compliance with a condition or covenant provided for in this Indenture shall include (a) a statement that the person making such certificate or opinion has read such covenant or condition, (b) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based, (c) a statement that, in the opinion of such person, he or she has made such examination or investigation as is necessary to enable him or her to express an informed opinion as to whether or not such covenant or condition has been complied with and (d) a statement as to whether or not, in the opinion of such person, such condition or covenant has been complied with.

Any certificate, statement or opinion of an officer of the Issuer may be based, insofar as it relates to legal matters, upon a certificate or opinion of or representations by counsel, unless such officer knows that the certificate or opinion or representations with respect to the matters upon which his or her certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous. Any certificate, statement or opinion of counsel may be based, insofar as it relates to factual matters, information with respect to which is in the possession of the Issuer, upon the certificate, statement or opinion of or representations by an officer or officers of the Issuer, unless such counsel knows that the certificate, statement or opinion or representations with respect to the matters upon which his or her certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous.

Any certificate, statement or opinion of an officer of the Issuer or of counsel may be based, insofar as it relates to accounting matters, upon a certificate or opinion of or representations by an accountant or firm of accountants in the employ of the Issuer, unless such officer or counsel, as the case may be, knows that the certificate or opinion or representations with respect to the accounting matters upon which his or her certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous.

Any certificate or opinion of any independent firm of public accountants filed with and directed to the Trustee shall contain a statement that such firm is independent.

Section 11.06 *Payments Due on Saturdays, Sundays and Holidays*. If the date of maturity of interest on or principal of the Securities of any series or the date fixed for redemption or repayment of any such Security, or the last day on which a Holder has the right to convert any Security, shall not be a Business Day, then payment of interest or principal, or any conversion, need not be made on such date, but may be made on the next succeeding Business Day with the same force and effect as if made on the date of maturity or the date fixed for redemption or on such last day for conversion, and no interest shall accrue for the period after such date.

Section 11.07 *Conflict of Any Provision of Indenture With Trust Indenture Act of 1939*. If and to the extent that any provision of this Indenture limits, qualifies or conflicts with another provision included in this Indenture by operation of Sections 310 to 317, inclusive, of the Trust Indenture Act of 1939, such incorporated provision shall control.

Section 11.08 *New York Law to Govern*. This Indenture and each Security shall be deemed to be a contract under the laws of the State of New York, and for all purposes shall be governed by and construed in accordance with the laws of such State without regard to any principle of conflict of laws that would require or permit the application of the laws of any other jurisdiction, except as may otherwise be required by mandatory provisions of law.

Section 11.09 *Counterparts*. This Indenture may be executed in any number of counterparts, each of which shall be an original; but such counterparts shall together constitute but one and the same instrument.

Section 11.10 *Effect of Headings*. The Article and Section headings herein and the Table of Contents are for convenience only and shall not affect the construction hereof.

Section 11.11 *Actions by Successor*. Any act or proceeding by any provision of this Indenture authorized or required to be done or performed by any board of directors or its equivalent, committee or officer of the Issuer shall and may be done and performed with like force and effect by the corresponding board, committee or officer of any corporation that shall at the time be the lawful successor of the Issuer.

Section 11.12 *Severability*. In case any one or more of the provisions contained in this Indenture or in the Securities of any series shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Indenture or of such Securities, but this Indenture and such Securities shall be construed as if such invalid or illegal or unenforceable provision had never been contained herein or therein.

ARTICLE 12
REDEMPTION OF SECURITIES AND SINKING FUNDS

Section 12.01 *Applicability of Article*. The provisions of this Article shall be applicable to the Securities of any series which are redeemable before their maturity or to any sinking fund for the retirement of Securities of a series, except as otherwise specified, as contemplated by Section 2.03 for Securities of such series.

Section 12.02 *Notice of Redemption; Partial Redemptions*. Notice of redemption to the Holders of Securities of any series to be redeemed as a whole or in part at the option of the Issuer shall be given by mailing notice of such redemption by first class mail, postage prepaid, at least 30 days and not more than 60 days prior to the date fixed for redemption to such Holders of Securities of such series at their last addresses as they shall appear upon the Security register. Any notice which is given in the manner herein provided shall be conclusively presumed to have been duly given, whether or not the Holder receives the notice. Failure to give notice or any defect in the notice to the Holder of any Security of a series designated for redemption as a whole or in part shall not affect the validity of the proceedings for the redemption of any other Security of such series.

The notice of redemption to each such Holder shall specify the principal amount of each Security of such series held by such Holder to be redeemed, the date fixed for redemption, the redemption price, the place or places of payment, that payment will be made upon presentation and surrender of such Securities, that such redemption is pursuant to the mandatory or optional sinking fund, or both, if such be the case, that interest accrued to the date fixed for redemption will be paid as specified in such notice and that on and after said date interest thereon or on the portions thereof to be redeemed will cease to accrue and shall also specify, if applicable, the conversion price then in effect and the date on which the right to convert such Securities or the portions thereof to be redeemed will expire. In case any Security of a series is to be redeemed in part only, the notice of redemption shall state the portion of the principal amount thereof to be redeemed and shall state that on and after the date fixed for redemption, upon surrender of such Security, a new Security or Securities of such series in principal amount equal to the unredeemed portion thereof will be issued.

The notice of redemption of Securities of any series to be redeemed at the option of the Issuer shall be given by the Issuer or, at the Issuer's request, by the Trustee in the name and at the expense of the Issuer.

On or before the redemption date specified in the notice of redemption given as provided in this Section, the Issuer will deposit with the Trustee or with one or more paying agents (or, if the Issuer is acting as its own paying agent, set aside, segregate and hold in trust as provided in

Section 3.04) an amount of money sufficient to redeem on the redemption date all the Securities of such series so called for redemption (other than those Securities theretofore surrendered for conversion into Common Stock in accordance with their terms) at the appropriate redemption price, together with accrued interest to the date fixed for redemption. If any Security called for redemption is converted pursuant hereto and in accordance with the terms thereof, any money deposited with the Trustee or any paying agent or so segregated and held in trust for the redemption of such Security shall be paid to the Issuer upon the Issuer's request, or, if then held by the Issuer, shall be discharged from such trust. The Issuer will deliver to the Trustee at least 10 days prior to the date the notice required to be delivered to the Holders is to be sent (unless a shorter time period shall be acceptable to the Trustee) an Officer's Certificate (which need not comply with Section 11.05) stating the aggregate principal amount of Securities to be redeemed. In case of a redemption at the election of the Issuer prior to the expiration of any restriction on such redemption, the Issuer shall deliver to the Trustee, prior to the giving of any notice of redemption to Holders pursuant to this Section, an Officer's Certificate stating that such restriction has been complied with.

If less than all the Securities of a series are to be redeemed, the Trustee shall select, in such manner as it shall deem appropriate and fair, Securities of such series to be redeemed in whole or in part. Securities may be redeemed in part in multiples equal to the minimum authorized denomination for Securities of such series or any multiple thereof. The Trustee shall promptly notify the Issuer in writing of the Securities of such series selected for redemption and, in the case of any Securities of such series selected for partial redemption, the principal amount thereof to be redeemed. For all purposes of this Indenture, unless the context otherwise requires, all provisions relating to the redemption of Securities of any series shall relate, in the case of any Security redeemed or to be redeemed only in part, to the portion of the principal amount of such Security which has been or is to be redeemed. If any Security selected for partial redemption is surrendered for conversion after such selection, the converted portion of such Security shall be deemed (so far as may be possible) to be the portion selected for redemption.

Section 12.03 *Payment of Securities Called for Redemption.* If notice of redemption has been given as above provided, the Securities or portions of Securities specified in such notice shall become due and payable on the date and at the place stated in such notice at the applicable redemption price, together with interest accrued to the date fixed for redemption, and on and after said date (unless the Issuer shall default in the payment of such Securities at the redemption price, together with interest accrued to said date) interest on the Securities or portions of Securities so called for redemption shall cease to accrue, and such Securities shall cease from and after the date fixed for redemption to be convertible into Common Stock (to the extent otherwise convertible in accordance with their terms), if applicable, and cease to be entitled to any benefit or security under this Indenture, and except as provided in the paragraph below, the Holders thereof shall have no right in respect of such Securities except the right to receive the redemption price thereof and unpaid interest to the date fixed for redemption. On presentation and surrender of such Securities at a place of payment specified in said notice, said Securities or the specified portions thereof shall be paid and redeemed by the Issuer at the applicable redemption price, together with interest accrued thereon to the date fixed for redemption; *provided*, that payment of interest becoming due on or prior to the date fixed for redemption shall be payable to the Holders of such Securities registered as such on the relevant record date subject to the terms and provisions of Sections 2.03 and 2.07 hereof.

If any Security called for redemption shall not be so paid upon surrender thereof for redemption, the principal shall, until paid or duly provided for, bear interest from the date fixed for redemption at the rate of interest or Yield to Maturity (in the case of an Original Issue Discount Security) borne by such Security and, if applicable, such Security shall remain convertible into Common Stock until the principal of such Security shall have been paid or duly provided for.

Upon presentation of any Security redeemed in part only, the Issuer shall execute and the Trustee shall authenticate and deliver to or on the order of the Holder thereof, at the expense of the Issuer, a new Security or Securities of such series, of authorized denominations, in principal amount equal to the unredeemed portion of the Security so presented.

Section 12.04 *Exclusion of Certain Securities from Eligibility for Selection for Redemption.* Securities shall be excluded from eligibility for selection for redemption if they are identified by registration and certificate number in an Officer's Certificate delivered to the Trustee at least 40 days prior to the last date on which notice of redemption may be given as being owned of record and beneficially by, and not pledged or hypothecated by either (a) the Issuer or (b) an entity specifically identified in such written statement as directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer.

Section 12.05 *Mandatory and Optional Sinking Funds.* The minimum amount of any sinking fund payment provided for by the terms of the Securities of any series is herein referred to as a "**mandatory sinking fund payment**", and any payment in excess of such minimum amount provided for by the terms of the Securities of any series is herein referred to as an "**optional sinking fund payment**". The date on which a sinking fund payment is to be made is herein referred to as the "**sinking fund payment date**".

In lieu of making all or any part of any mandatory sinking fund payment with respect to any series of Securities in cash, the Issuer may at its option (a) deliver to the Trustee Securities of such series theretofore purchased or otherwise acquired (except upon redemption pursuant to the mandatory sinking fund) by the Issuer or receive credit for Securities of such series (not previously so credited) theretofore purchased or otherwise acquired (except as aforesaid) by the Issuer and delivered to the Trustee for cancellation pursuant to Section 2.10 and, if applicable, receive credit for Securities (not previously so credited) converted into Common Stock and so delivered to the Trustee for cancellation, (b) receive credit for optional sinking fund payments (not previously so credited) made pursuant to this Section, or (c) receive credit for Securities of such series (not previously so credited) redeemed by the Issuer through any optional redemption provision contained in the terms of such series. Securities so delivered or credited shall be received or credited by the Trustee at the sinking fund redemption price specified in such Securities.

On or before the 60th day next preceding each sinking fund payment date for any series, the Issuer will deliver to the Trustee an Officer's Certificate (which need not contain the

statements required by Section 11.05) (a) specifying the portion of the mandatory sinking fund payment to be satisfied by payment of cash and the portion to be satisfied by credit of Securities of such series and the basis for such credit, (b) stating that none of the Securities of such series for which credit will be taken has theretofore been so credited, (c) stating that no defaults in the payment of interest or Events of Default with respect to such series have occurred (which have not been waived or cured) and are continuing and (d) stating whether or not the Issuer intends to exercise its right to make an optional sinking fund payment with respect to such series and, if so, specifying the amount of such optional sinking fund payment which the Issuer intends to pay on or before the next succeeding sinking fund payment date. Any Securities of such series to be credited and required to be delivered to the Trustee in order for the Issuer to be entitled to credit therefor as aforesaid which have not theretofore been delivered to the Trustee shall be delivered for cancellation pursuant to Section 2.10 to the Trustee with such Officer's Certificate (or reasonably promptly thereafter if acceptable to the Trustee). Such Officer's Certificate shall be irrevocable and upon its receipt by the Trustee the Issuer shall become unconditionally obligated to make all the cash payments or payments therein referred to, if any, on or before the next succeeding sinking fund payment date. Failure of the Issuer, on or before any such 60th day, to deliver such Officer's Certificate and Securities specified in this paragraph, if any, shall not constitute a default but shall constitute, on and as of such date, the irrevocable election of the Issuer that the mandatory sinking fund payment for such series due on the next succeeding sinking fund payment date shall be paid entirely in cash without the option to deliver or credit Securities of such series in respect thereof.

If the sinking fund payment or payments (mandatory or optional or both) to be made in cash on the next succeeding sinking fund payment date plus any unused balance of any preceding sinking fund payments made in cash shall exceed \$50,000 (or the equivalent thereof in any Foreign Currency or a lesser sum in Dollars or in any Foreign Currency if the Issuer shall so request) with respect to the Securities of any particular series, such cash shall be applied on the next succeeding sinking fund payment date to the redemption of Securities of such series at the sinking fund redemption price together with accrued interest to the date fixed for redemption. If such amount shall be \$50,000 (or the equivalent thereof in any Foreign Currency) or less and the Issuer makes no such request then it shall be carried over until a sum in excess of \$50,000 (or the equivalent thereof in any Foreign Currency) is available, which delay in accordance with this paragraph shall not be a default or breach of the obligation to make such payment. The Trustee shall select, in the manner provided in Section 12.02, for redemption on such sinking fund payment date a sufficient principal amount of Securities of such series to which such cash may be applied, as nearly as may be, and shall (if requested in writing by the Issuer) inform the Issuer of the serial numbers of the Securities of such series (or portions thereof) so selected. The Trustee, in the name and at the expense of the Issuer (or the Issuer, if it shall so request the Trustee in writing), shall cause notice of redemption of the Securities of such series to be given in substantially the manner provided in Section 12.02 (and with the effect provided in Section 12.03) for the redemption of Securities of such series in part at the option of the Issuer. The amount of any sinking fund payments not so applied or allocated to the redemption of Securities of such series shall be added to the next cash sinking fund payment for such series and, together with such payment, shall be applied in accordance with the provisions of this Section. Any and all sinking fund moneys held on the stated maturity date of the Securities of any particular series (or earlier, if such maturity is accelerated), which are not held for the payment or redemption of particular Securities of such series, shall be applied, together with other moneys, if necessary,

sufficient for the purpose, to the payment of the principal of, and interest on, the Securities of such series at maturity. The Issuer's obligation to make a mandatory or optional sinking fund payment shall automatically be reduced by an amount equal to the sinking fund redemption price allocable to any Securities or portions thereof called for redemption pursuant to the preceding paragraph on any sinking fund payment date and converted into Common Stock in accordance with the terms of such Securities; *provided that*, if the Trustee is not the conversion agent for the Securities, the Issuer or such conversion agent shall give the Trustee written notice on or prior to the date fixed for redemption of the principal amount of Securities or portions thereof so converted.

On or before each sinking fund payment date, the Issuer shall pay to the Trustee in cash or shall otherwise provide for the payment of all interest accrued to the date fixed for redemption on Securities to be redeemed on such sinking fund payment date.

The Trustee shall not redeem or cause to be redeemed any Securities of a series with sinking fund moneys or give any notice of redemption of Securities for such series by operation of the sinking fund during the continuance of a default in payment of interest on such Securities or of any Event of Default except that, where the mailing of notice of redemption of any Securities shall theretofore have been made, the Trustee shall redeem or cause to be redeemed such Securities, provided that it shall have received from the Issuer a sum sufficient for such redemption. Except as aforesaid, any moneys in the sinking fund for such series at the time when any such default or Event of Default shall occur, and any moneys thereafter paid into the sinking fund, shall, during the continuance of such default or Event of Default, be deemed to have been collected under Article 5 and held for the payment of all such Securities. In case such Event of Default shall have been waived as provided in Section 5.10, or the default cured on or before the 60th day preceding the sinking fund payment date in any year, such moneys shall thereafter be applied on such sinking fund payment date in accordance with this Section to the redemption of such Securities.

[Signature pages follow]

IN WITNESS WHEREOF, the parties hereto have caused this Indenture to be duly executed as of _____ .

TETRAPHASE PHARMACEUTICALS, INC.

By: _____
Name:
Title:

Attest:

By: _____
Name:
Title:

_____, Trustee

By: _____
Name:
Title:

TETRAPHASE PHARMACEUTICALS, INC.

and

Trustee

INDENTURE

Dated as of

SUBORDINATED DEBT SECURITIES

CROSS-REFERENCE TABLE(1)

<u>Section of Trust Indenture Act of 1939, as amended</u>	<u>Section of Indenture</u>
310(a)	6.09
310(b)	6.08
	6.10
310(c)	Inapplicable
311(a)	6.13
311(b)	6.13
311(c)	Inapplicable
312(a)	4.01
	4.04
312(b)	4.04(c)
312(c)	4.04(c)
313(a)	4.03
313(b)	4.03
313(c)	4.03
313(d)	4.03
314(a)	4.02
314(b)	Inapplicable
314(c)	2.04
	8.04
	9.01(c)
	10.01(b)
	11.05
314(d)	Inapplicable
314(e)	11.05
314(f)	Inapplicable
315(a)	6.01
	6.02
315(b)	5.11
315(c)	6.01
315(d)	6.01
	6.02
315(e)	5.12
316(a)	5.09
	5.10
	7.04
316(b)	5.06
	5.10
316(c)	7.02
317(a)	5.04
317(b)	3.04
318(a)	11.07

(1) This Cross-Reference Table does not constitute part of the Indenture and shall not have any bearing on the interpretation of any of its terms or provisions.

TABLE OF CONTENTS

	Page
ARTICLE 1 DEFINITIONS	1
Section 1.01 Certain Terms Defined	1
ARTICLE 2 SECURITIES	6
Section 2.01 Forms Generally	6
Section 2.02 Form of Trustee's Certificate of Authentication	6
Section 2.03 Amount Unlimited; Issuable in Series	6
Section 2.04 Authentication and Delivery of Securities	9
Section 2.05 Execution of Securities	10
Section 2.06 Certificate of Authentication	11
Section 2.07 Denomination and Date of Securities; Payments of Interest	11
Section 2.08 Registration, Transfer and Exchange	11
Section 2.09 Mutilated, Defaced, Destroyed, Lost and Stolen Securities	14
Section 2.10 Cancellation of Securities; Destruction Thereof	14
Section 2.11 Temporary Securities	15
ARTICLE 3 COVENANTS OF THE ISSUER	15
Section 3.01 Payment of Principal and Interest	15
Section 3.02 Offices for Payments, Etc	15
Section 3.03 Appointment to Fill a Vacancy in Office of Trustee	16
Section 3.04 Paying Agents	16
Section 3.05 Written Statement to Trustee	17
ARTICLE 4 SECURITYHOLDERS LISTS AND REPORTS BY THE ISSUER AND THE TRUSTEE	17
Section 4.01 Issuer to Furnish Trustee Information as to Names and Addresses of Securityholders	17
Section 4.02 Reports by the Issuer	17
Section 4.03 Reports by the Trustee	18
Section 4.04 Preservation of Information; Communication with Securityholders	18
ARTICLE 5 REMEDIES OF THE TRUSTEE AND SECURITYHOLDERS ON EVENT OF DEFAULT	18
Section 5.01 Event of Default Defined; Acceleration of Maturity; Waiver of Default	18
Section 5.02 Collection of Debt by Trustee; Trustee May Prove Debt	20
Section 5.03 Application of Proceeds	22
Section 5.04 Suits for Enforcement	23
Section 5.05 Restoration of Rights on Abandonment of Proceedings	23
Section 5.06 Limitations on Suits by Securityholders	23
Section 5.07 Unconditional Right of Securityholders to Institute Certain Suits	24
Section 5.08 Powers and Remedies Cumulative; Delay or Omission Not Waiver of Default	24
Section 5.09 Control by Holders of Securities	24
Section 5.10 Waiver of Past Defaults	25

Section 5.11	Trustee to Give Notice of Default	25
Section 5.12	Right of Court to Require Filing of Undertaking to Pay Costs	25
ARTICLE 6	CONCERNING THE TRUSTEE	26
Section 6.01	Duties and Responsibilities of the Trustee; During Default; Prior to Default	26
Section 6.02	Certain Rights of the Trustee	26
Section 6.03	Trustee Not Responsible for Recitals, Disposition of Securities or Application of Proceeds Thereof	28
Section 6.04	Trustee and Agents May Hold Securities; Collections, Etc	28
Section 6.05	Moneys Held by Trustee	28
Section 6.06	Compensation and Indemnification of Trustee and Its Prior Claim	28
Section 6.07	Right of Trustee to Rely on Officer's Certificate, Etc	29
Section 6.08	Disqualification; Conflicting Interests	29
Section 6.09	Persons Eligible for Appointment as Trustee	29
Section 6.10	Resignation and Removal; Appointment of Successor Trustee	29
Section 6.11	Acceptance of Appointment by Successor Trustee	30
Section 6.12	Merger, Conversion, Consolidation or Succession to Business of Trustee	31
Section 6.13	Preferential Collection of Claims Against the Issuer	32
ARTICLE 7	CONCERNING THE SECURITYHOLDERS	32
Section 7.01	Evidence of Action Taken by Securityholders	32
Section 7.02	Proof of Execution of Instruments and of Holding of Securities	32
Section 7.03	Holder to Be Treated as Owner	32
Section 7.04	Securities Owned by Issuer Deemed Not Outstanding	33
Section 7.05	Right of Revocation of Action Taken	33
ARTICLE 8	SUPPLEMENTAL INDENTURES	33
Section 8.01	Supplemental Indentures Without Consent of Securityholders	33
Section 8.02	Supplemental Indentures With Consent of Securityholders	35
Section 8.03	Effect of Supplemental Indenture	36
Section 8.04	Documents to Be Given to Trustee	36
Section 8.05	Notation on Securities in Respect of Supplemental Indentures	36
ARTICLE 9	CONSOLIDATION, MERGER, SALE OR CONVEYANCE	37
Section 9.01	Issuer May Consolidate, Etc., on Certain Terms	37
Section 9.02	Successor Issuer Substituted	38
ARTICLE 10	SATISFACTION AND DISCHARGE OF INDENTURE; DEFEASANCE; UNCLAIMED MONEYS	38
Section 10.01	Satisfaction and Discharge of Indenture; Defeasance	38
Section 10.02	Application by Trustee of Funds Deposited for Payment of Securities	41
Section 10.03	Repayment of Moneys Held by Paying Agent	42
Section 10.04	Return of Moneys Held by Trustee and Paying Agent Unclaimed for Two Years	42
Section 10.05	Indemnity for U.S. Government Obligations	42

ARTICLE 11 MISCELLANEOUS PROVISIONS	42
Section 11.01 No Recourse	42
Section 11.02 Provisions of Indenture for the Sole Benefit of Parties and Holders of Securities	43
Section 11.03 Successors and Assigns of Issuer Bound by Indenture	43
Section 11.04 Notices and Demands on Issuer, Trustee and Holders of Securities	43
Section 11.05 Officer's Certificates and Opinions of Counsel; Statements to Be Contained Therein	44
Section 11.06 Payments Due on Saturdays, Sundays and Holidays	45
Section 11.07 Conflict of Any Provision of Indenture With Trust Indenture Act of 1939	45
Section 11.08 New York Law to Govern	45
Section 11.09 Counterparts	45
Section 11.10 Effect of Headings	45
Section 11.11 Actions by Successor	45
Section 11.12 Severability	45
ARTICLE 12 REDEMPTION OF SECURITIES AND SINKING FUNDS	45
Section 12.01 Applicability of Article	45
Section 12.02 Notice of Redemption; Partial Redemptions	46
Section 12.03 Payment of Securities Called for Redemption	47
Section 12.04 Exclusion of Certain Securities from Eligibility for Selection for Redemption	47
Section 12.05 Mandatory and Optional Sinking Funds	48
ARTICLE 13 SUBORDINATION OF SECURITIES	50
Section 13.01 Agreement of Subordination	50
Section 13.02 Payments to Securityholders	50
Section 13.03 Subrogation of Securities	52
Section 13.04 Authorization by Securityholders	52
Section 13.05 Notice to Trustee	53
Section 13.06 Trustee's Relation to Senior Indebtedness	53
Section 13.07 No Impairment of Subordination	54
Section 13.08 Rights of Trustee	54

THIS INDENTURE, dated as of _____ between Tetrphase Pharmaceuticals, Inc., a Delaware corporation (the “**Issuer**”), and _____, a
(the “**Trustee**”),

WITNESSETH:

WHEREAS, the Issuer may from time to time duly authorize the issue of its unsecured subordinated debentures, notes or other evidences of indebtedness to be issued in one or more series (the “**Securities**”), up to such principal amount or amounts as may from time to time be authorized in accordance with the terms of this Indenture;

WHEREAS, the Issuer has duly authorized the execution and delivery of this Indenture to provide, among other things, for the authentication, delivery and administration of the Securities; and

WHEREAS, all things necessary to make this Indenture a valid indenture and agreement according to its terms have been done;

NOW, THEREFORE:

In consideration of the premises and the purchases of the Securities by the holders thereof, the Issuer and the Trustee mutually covenant and agree for the equal and proportionate benefit of the respective holders from time to time of the Securities as follows:

ARTICLE 1
DEFINITIONS

Section 1.01 *Certain Terms Defined*. The following terms (except as otherwise expressly provided or unless the context otherwise clearly requires) for all purposes of this Indenture and of any indenture supplemental hereto shall have the respective meanings specified in this Section. All other terms used in this Indenture that are defined in the Trust Indenture Act of 1939 or the definitions of which in the Securities Act of 1933 are referred to in the Trust Indenture Act of 1939, including terms defined therein by reference to the Securities Act of 1933 (except as herein otherwise expressly provided or unless the context otherwise clearly requires), shall have the meanings assigned to such terms in said Trust Indenture Act and in said Securities Act as in force at the date of this Indenture. All accounting terms used herein and not expressly defined shall have the meanings assigned to such terms in accordance with generally accepted accounting principles, and the term “**generally accepted accounting principles**” means such accounting principles as are generally accepted in the United States at the time of any computation. The words “herein”, “hereof” and “hereunder” and other words of similar import refer to this Indenture as a whole and not to any particular Article, Section or other subdivision. The terms defined in this Article have the meanings assigned to them in this Article and include the plural as well as the singular.

“**Board of Directors**” means either the Board of Directors of the Issuer or any committee of such Board duly authorized to act on its behalf.

“Board Resolution” means a copy of one or more resolutions, certified by the secretary or an assistant secretary of the Issuer to have been duly adopted by the Board of Directors and to be in full force and effect, and delivered to the Trustee.

“Business Day” means, with respect to any Security, a day that in the city (or in any of the cities, if more than one) in which amounts are payable, as specified in the form of such Security, is not a day on which banking institutions are authorized or required by law or regulation to close.

“Commission” means the Securities and Exchange Commission, as from time to time constituted, created under the Securities Exchange Act of 1934, or if at any time after the execution and delivery of this Indenture such Commission is not existing and performing the duties now assigned to it under the Trust Indenture Act of 1939, then the body performing such duties on such date.

“Common Stock” means shares of common stock, par value \$0.001 per share, of the Issuer as the same exists at the date of execution and delivery of this Indenture or as such stock may be reconstituted from time to time.

“Corporate Trust Office” means the office of the Trustee at which the corporate trust business of the Trustee shall, at any particular time, be principally administered, which office is, at the date as of which this Indenture is dated, located at .

“Debt” of any Person means any debt for money borrowed which is created, assumed, incurred or guaranteed in any manner by such Person or for which such Person is otherwise responsible or liable, and shall expressly include any such guaranty thereof by such Person. For the purpose of computing the amount of the Debt of any Person there shall be excluded all Debt of such Person for the payment or redemption or satisfaction of which money or securities (or evidences of such Debt, if permitted under the terms of the instrument creating such Debt) in the necessary amount shall have been deposited in trust with the proper depository, whether upon or prior to the maturity or the date fixed for redemption of such Debt; and, in any instance where Debt is so excluded, for the purpose of computing the assets of such Person there shall be excluded the money, securities or evidences of Debt deposited by such Person in trust for the purpose of paying or satisfying such Debt.

“Depository” means, with respect to the Securities of any series issuable or issued in the form of one or more Global Securities, the Person designated as Depository by the Issuer pursuant to Section 2.04 until a successor Depository shall have become such pursuant to the applicable provisions of this Indenture, and thereafter **“Depository”** shall mean or include each Person who is then a Depository hereunder, and if at any time there is more than one such Person, **“Depository”** as used with respect to the Securities of any such series shall mean the Depository with respect to the Global Securities of that series.

“Dollar” means the currency of the United States of America as at the time of payment is legal tender for the payment of public and private debts.

“Event of Default” means any event or condition specified as such in Section 5.01.

“Foreign Currency” means a currency issued by the government of a country other than the United States.

“Global Security”, means a Security evidencing all or a part of a series of Securities, issued to the Depository for such series in accordance with Section 2.04, and bearing the legend prescribed in Section 2.04.

“Holder”, **“holder”**, **“holder of Securities”**, **“Securityholder”** or other similar terms mean the Person in whose name such Security is registered in the Security register kept by the Issuer for that purpose in accordance with the terms hereof.

“Indenture” means this instrument as originally executed and delivered or, if amended or supplemented as herein provided, as so amended or supplemented or both, and shall include the forms and terms of particular series of Securities established as contemplated hereunder.

“interest”, unless the context otherwise requires, refers to interest, and when used with respect to non-interest bearing Securities, refers to interest payable after maturity, if any.

“Issuer” means Tetrphase Pharmaceuticals, Inc., a Delaware corporation, and, subject to Article 9, its successors and assigns.

“Issuer Order” means a written statement, request or order of the Issuer signed in its name by the chairman of the Board of Directors, the president or any vice president of the Issuer.

“Notice of Default” shall have the meaning set forth in Section 5.01(c).

“Officer’s Certificate” means a certificate signed by the chairman of the Board of Directors, the president, any vice president, the treasurer, the secretary or any assistant secretary of the Issuer and delivered to the Trustee. Each such certificate shall comply with Section 314 of the Trust Indenture Act of 1939 and, except to the extent provided herein, shall include the statements provided for in Section 11.05.

“Opinion of Counsel” means an opinion in writing signed by the general corporate counsel or such other legal counsel who may be an employee of or counsel to the Issuer and who shall be satisfactory to the Trustee. Each such opinion shall comply with Section 314 of the Trust Indenture Act of 1939 and shall include the statements provided for in Section 11.05, if and to the extent required hereby.

“original issue date” of any Security (or portion thereof) means the earlier of (a) the date of such Security or (b) the date of any Security (or portion thereof) for which such Security was issued (directly or indirectly) on registration of transfer, exchange or substitution.

“Original Issue Discount Security” means any Security that provides for an amount less than the principal amount thereof to be due and payable upon a declaration of acceleration of the maturity thereof pursuant to Section 5.01.

“Outstanding”, when used with reference to Securities, shall, subject to the provisions of Section 7.04, mean, as of any particular time, all Securities authenticated and delivered by the Trustee under this Indenture, except

(a) Securities theretofore cancelled by the Trustee or delivered to the Trustee for cancellation;

(b) Securities, or portions thereof, for the payment or redemption of which cash or U.S. Government Obligations (as provided for in Section 10.01(a) and Section 10.01(b)) in the necessary amount shall have been deposited in trust with the Trustee or with any paying agent (other than the Issuer) or shall have been set aside, segregated and held in trust by the Issuer for the Holders of such Securities (if the Issuer shall act as its own paying agent); *provided*, that if such Securities, or portions thereof, are to be redeemed prior to the maturity thereof, notice of such redemption shall have been given as herein provided, or provision satisfactory to the Trustee shall have been made for giving such notice; and

(c) Securities in substitution for which other Securities shall have been authenticated and delivered, or which shall have been paid, pursuant to the terms of Section 2.09 (except with respect to any such Security as to which proof satisfactory to the Trustee is presented that such Security is held by a Person in whose hands such Security is a legal, valid and binding obligation of the Issuer), Securities converted into Common Stock pursuant hereto and Securities not deemed outstanding pursuant to Section 12.02.

In determining whether the Holders of the requisite principal amount of Outstanding Securities of any or all series have given any request, demand, authorization, direction, notice, consent or waiver hereunder, the principal amount of an Original Issue Discount Security that shall be deemed to be Outstanding for such purposes shall be the amount of the principal thereof that would be due and payable as of the date of such determination upon a declaration of acceleration of the maturity thereof pursuant to Section 5.01.

“Person” means any individual, corporation, partnership, limited partnership, limited liability company, joint venture, association, joint stock company, trust, unincorporated organization or government or any agency or political subdivision thereof.

“principal” whenever used with reference to the Securities or any Security or any portion thereof, shall be deemed to include “and premium, if any”.

“record date” shall have the meaning set forth in Section 2.07.

“Responsible Officer”, when used with respect to the Trustee, means the chairman of the board of directors, any vice chairman of the board of directors, the chairman of the trust committee, the chairman of the executive committee, any vice chairman of the executive committee, the president, any vice president, the cashier, the secretary, the treasurer, any trust officer, any assistant trust officer, any assistant vice president, any assistant cashier, any assistant secretary, any assistant treasurer, or any other officer or assistant officer of the Trustee customarily performing functions similar to those performed by the persons who at the time shall be such officers, respectively, or to whom any corporate trust matter is referred because of his or her knowledge of and familiarity with the particular subject.

“**Security**” or “**Securities**” has the meaning stated in the first recital of this Indenture, or, as the case may be, Securities that have been authenticated and delivered under this Indenture.

“**Security Registrar**” shall have the meaning set forth in Section 4.01(b).

“**Senior Indebtedness**” of a Person means the principal of, premium, if any, interest on, and any other payment due pursuant to any of the following, whether outstanding at the date hereof or hereafter incurred or created:

(a) all of the indebtedness of that Person for money borrowed;

(b) all of the indebtedness of that Person evidenced by notes, debentures, bonds or other securities sold by that Person for money;

(c) all of the lease obligations which are capitalized on the books of that Person in accordance with generally accepted accounting principles;

(d) all indebtedness of others of the kinds described in either of the preceding clauses (a) or (b) above and all lease obligations of others of the kind described in the preceding clause (c) above that the Person, in any manner, assumes or guarantees or that the Person in effect guarantees through an agreement to purchase, whether that agreement is contingent or otherwise; and

(e) all renewals, extensions or refundings of indebtedness of the kinds described in any of the preceding clauses (a), (b) and (d) and all renewals or extensions of leases of the kinds described in either of the preceding clauses (c) or (d) above;

unless, in the case of any particular indebtedness, lease, renewal, extension or refunding, the instrument or lease creating or evidencing it or the assumption or guarantee relating to it expressly provides that such indebtedness, lease, renewal, extension or refunding is not superior in right of payment to the Securities.

“**Subsidiary**” means a corporation of which stock having a majority of the voting power under ordinary circumstances is owned, directly or indirectly, by the Issuer or by one or more subsidiaries of the Issuer, or by the Issuer and one or more subsidiaries of the Issuer.

“**Trust Indenture Act of 1939**” (except as otherwise provided in Sections 8.01 and 8.02) means the Trust Indenture Act of 1939 as in force at the date as of which this Indenture was originally executed.

“**Trustee**” means the Person identified as “**Trustee**” in the first paragraph hereof and, subject to the provisions of Article 6, shall also include any successor trustee. “**Trustee**” shall also mean or include each Person who is then a trustee hereunder and if at any time there is more than one such Person, “**Trustee**” as used with respect to the Securities of any series shall mean the trustee with respect to the Securities of such series.

“**U.S. Government Obligation**” means (a) a direct obligation of the United States of America, backed by its full faith and credit, or (b) an obligation of a Person controlled or

supervised by and acting as an agency or instrumentality of the United States of America, the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America.

“**vice president**”, when used with respect to the Issuer or the Trustee, means any vice president, whether or not designated by a number or a word or words added before or after the title of “vice president”.

“**Yield to Maturity**” means the yield to maturity on a series of securities, calculated at the time of issuance of such series, or, if applicable, at the most recent redetermination of interest on such series, and calculated in accordance with accepted financial practice.

ARTICLE 2
SECURITIES

Section 2.01 *Forms Generally*. The Securities of each series shall be substantially in such form (not inconsistent with this Indenture) as shall be established by or pursuant to one or more Board Resolutions (as set forth in a Board Resolution or, to the extent established pursuant to (rather than set forth in) a Board Resolution, an Officer’s Certificate detailing such establishment) or in one or more indentures supplemental hereto, in each case with such appropriate insertions, omissions, substitutions and other variations as are required or permitted by this Indenture and may have imprinted or otherwise reproduced thereon such legend or legends or endorsements, not inconsistent with the provisions of this Indenture, as may be required to comply with any law or with any rules or regulations pursuant thereto, or with any rules of any securities exchange or to conform to general usage, all as may be determined by the officers executing such Securities as evidenced by their execution of such Securities.

The definitive Securities shall be printed, lithographed or engraved on steel engraved borders or may be produced in any other manner, all as determined by the officers executing such Securities as evidenced by their execution of such Securities.

Section 2.02 *Form of Trustee’s Certificate of Authentication*. The Trustee’s certificate of authentication on all Securities shall be in substantially the following form:

This is one of the Securities of the series designated herein and referred to in the within-mentioned Indenture.

as Trustee

By: _____
Authorized Officer

Section 2.03 *Amount Unlimited; Issuable in Series*. The aggregate principal amount of Securities which may be authenticated and delivered under this Indenture is unlimited.

The Securities may be issued in one or more series. The terms of a series of Securities shall be established prior to the initial issuance thereof in or pursuant to one or more Board Resolutions, or, to the extent established pursuant to (rather than set forth in) a Board Resolution, in an Officer's Certificate detailing such establishment and/or established in one or more indentures supplemental hereto. The terms of such series reflected in such Board Resolution, Officer's Certificate, or supplemental indenture may include the following or any additional or different terms:

(a) the designation of the Securities of the series (which may be part of a series of Securities previously issued);

(b) the terms and conditions, if applicable, upon which conversion or exchange of the Securities into Common Stock will be effected, including the initial conversion or exchange price or rate and any adjustments thereto, the conversion or exchange period and other provisions in addition to or in lieu of those described herein;

(c) any limit upon the aggregate principal amount of the Securities of the series that may be authenticated and delivered under this Indenture (except for Securities authenticated and delivered upon registration of transfer of, or in exchange for, or in lieu of, other Securities of the series pursuant to Section 2.08, 2.09, 2.11, 8.05 or 12.03);

(d) if other than Dollars, the Foreign Currency in which the Securities of that series are denominated;

(e) any date on which the principal of the Securities of the series is payable and the right, if any, to extend such date or dates;

(f) the rate or rates at which the Securities of the series shall bear interest, if any, the record date or dates for the determination of holders to whom interest is payable, the date or dates from which such interest shall accrue and on which such interest shall be payable and/or the method by which such rate or rates or date or dates shall be determined, and the right, if any, to extend the interest payment periods and the duration of that extension;

(g) the place or places where the principal of and any interest on Securities of the series shall be payable (if other than as provided in Section 3.02);

(h) the price or prices at which, the period or periods within which and the terms and conditions upon which Securities of the series may be redeemed, in whole or in part, at the option of the Issuer, pursuant to any sinking fund or otherwise;

(i) the obligation, if any, of the Issuer to redeem, purchase or repay Securities of the series pursuant to any mandatory redemption, sinking fund or analogous provisions or at the option of a Holder thereof and the price or prices at which and the period or periods within which and any terms and conditions upon which Securities of the series shall be redeemed, purchased or repaid, in whole or in part, pursuant to such obligation;

(j) if other than denominations of \$1,000 and any integral multiple thereof, the denominations in which Securities of the series shall be issuable;

(k) if other than the principal amount thereof, the portion of the principal amount of Securities of the series which shall be payable upon declaration of acceleration of the maturity thereof;

(l) if other than the currency in which the Securities of that series are denominated, the currency in which payment of the principal of or interest on the Securities of such series shall be payable;

(m) if the principal of or interest on the Securities of the series is to be payable, at the election of the Issuer or a Holder thereof, in a currency other than that in which the Securities are denominated, the period or periods within which, and the terms and conditions upon which, such election may be made;

(n) if the amount of payments of principal of and interest on the Securities of the series may be determined with reference to an index based on a currency other than that in which the Securities of the series are denominated, or by reference to one or more currency exchange rates, securities or baskets of securities, commodity prices or indices, the manner in which such amounts shall be determined;

(o) if Sections 10.01(b) or 10.01(c) are inapplicable to Securities of such series;

(p) whether and under what circumstances the Issuer will pay additional amounts on the Securities of any series in respect of any tax, assessment or governmental charge withheld or deducted and, if so, whether the Issuer will have the option to redeem such Securities rather than pay such additional amounts;

(q) if the Securities of such series are to be issuable in definitive form (whether upon original issue or upon exchange of a temporary Security of such series) only upon receipt of certain certificates or other documents or satisfaction of other conditions, then the form and terms of such certificates, documents or conditions;

(r) any trustees, authenticating or paying agents, transfer agents or registrars or any other agents with respect to the Securities of such series;

(s) any other events of default or covenants with respect to the Securities of such series in addition to or in lieu of those contained in this Indenture;

(t) if the Securities of the series may be issued in exchange for surrendered Securities of another series, or for other securities of the Issuer, pursuant to the terms of such Securities or securities or of any agreement entered into by the Issuer, the ratio of the principal amount of the Securities of the series to be issued to the principal amount of the Securities or securities to be surrendered in exchange, and any other material terms of the exchange;

(u) the extent to which payments on the Securities will be subordinated to the payment of Senior Indebtedness of the Issuer; and

(v) any other terms of the series.

The Issuer may from time to time, without notice to or the consent of the holders of any series of Securities, create and issue further Securities of any such series ranking equally with the Securities of such series in all respects (or in all respects other than (1) the payment of interest accruing prior to the issue date of such further Securities or (2) the first payment of interest following the issue date of such further Securities). Such further Securities may be consolidated and form a single series with the Securities of such series and have the same terms as to status, redemption or otherwise as the Securities of such series.

Section 2.04 *Authentication and Delivery of Securities*. The Issuer may deliver Securities of any series executed by the Issuer to the Trustee for authentication together with the applicable documents referred to below in this Section, and the Trustee shall thereupon authenticate and deliver such Securities to or upon the order of the Issuer (contained in the Issuer Order referred to below in this Section) or pursuant to such procedures acceptable to the Trustee and to such recipients as may be specified from time to time by an Issuer Order. The maturity date, original issue date, interest rate and any other terms of the Securities of such series shall be determined by or pursuant to such Issuer Order and procedures. If provided for in such procedures, such Issuer Order may authorize authentication and delivery pursuant to oral instructions from the Issuer or its duly authorized agent, which instructions shall be promptly confirmed in writing. In authenticating such Securities and accepting the additional responsibilities under this Indenture in relation to such Securities, the Trustee shall be entitled to receive, and (subject to Section 6.01) shall be fully protected in relying upon:

- (a) an Issuer Order requesting such authentication and setting forth delivery instructions if the Securities are not to be delivered to the Issuer;
- (b) any Board Resolution, Officer's Certificate and/or executed supplemental indenture referred to in Sections 2.01 and 2.03 by or pursuant to which the forms and terms of the Securities were established;
- (c) an Officer's Certificate setting forth the form or forms and terms of the Securities stating that the form or forms and terms of the Securities have been established pursuant to Sections 2.01 and 2.03 and comply with this Indenture, and covering such other matters as the Trustee may reasonably request; and
- (d) an Opinion of Counsel to the effect that:
 - (i) the form or forms and terms of such Securities have been established pursuant to Sections 2.01 and 2.03 and comply with this Indenture,
 - (ii) the authentication and delivery of such Securities by the Trustee are authorized under the provisions of this Indenture,
 - (iii) such Securities when authenticated and delivered by the Trustee and issued by the Issuer in the manner and subject to any conditions specified in such Opinion of Counsel, will constitute valid and binding obligations of the Issuer, and
 - (iv) all laws and requirements in respect of the execution and delivery by the Issuer of the Securities have been complied with,

and covering such other matters as the Trustee may reasonably request.

The Trustee shall have the right to decline to authenticate and deliver any Securities under this Section if the Trustee, being advised by counsel, determines that such action may not lawfully be taken by the Issuer or if the Trustee in good faith by its board of directors or board of trustees, executive committee, or a trust committee of directors or trustees or Responsible Officers shall determine that such action would expose the Trustee to personal liability to existing Holders or would affect the Trustee's own rights, duties or immunities under the Securities, this Indenture or otherwise.

The Issuer shall execute and the Trustee shall, in accordance with this Section with respect to the Securities of a series, authenticate and deliver one or more Global Securities that (i) shall represent and shall be denominated in an amount equal to the aggregate principal amount of all of the Securities of such series issued and not yet cancelled, (ii) shall be registered in the name of the Depository for such Global Security or Securities or the nominee of such Depository, (iii) shall be delivered by the Trustee to such Depository or pursuant to such Depository's instructions and (iv) shall bear a legend substantially to the following effect: "Unless and until it is exchanged in whole or in part for Securities in definitive registered form, this Security may not be transferred except as a whole by the Depository to the nominee of the Depository or by a nominee of the Depository to the Depository or another nominee of the Depository or by the Depository or any such nominee to a successor Depository or a nominee of such successor Depository."

Each Depository designated pursuant to this Section must, at the time of its designation and at all times while it serves as Depository, be a clearing agency registered under the Securities Exchange Act of 1934 and any other applicable statute or regulation.

Section 2.05 *Execution of Securities*. The Securities shall be signed on behalf of the Issuer by the chairman of its Board of Directors, any vice chairman of its Board of Directors, its chief executive officer, its principal financial officer, its president, any vice president or its treasurer. Such signatures may be the manual or facsimile signatures of the present or any future such officers. Typographical and other minor errors or defects in any such reproduction of any such signature shall not affect the validity or enforceability of any Security that has been duly authenticated and delivered by the Trustee.

In case any officer of the Issuer who shall have signed any of the Securities shall cease to be such officer before the Security so signed shall be authenticated and delivered by the Trustee or disposed of by the Issuer, such Security nevertheless may be authenticated and delivered or disposed of as though the person who signed such Security had not ceased to be such officer of the Issuer; and any Security may be signed on behalf of the Issuer by such persons as, at the actual date of the execution of such Security, shall be the proper officers of the Issuer, although at the date of the execution and delivery of this Indenture any such person was not such an officer.

Section 2.06 *Certificate of Authentication*. Only such Securities as shall bear thereon a certificate of authentication substantially in the form hereinbefore recited, executed by the Trustee by the manual signature of one of its authorized officers, shall be entitled to the benefits of this Indenture or be valid or obligatory for any purpose. The execution of such certificate by the Trustee upon any Security executed by the Issuer shall be conclusive evidence that the Security so authenticated has been duly authenticated and delivered hereunder and that the Holder is entitled to the benefits of this Indenture.

Section 2.07 *Denomination and Date of Securities; Payments of Interest*. The Securities of each series shall be issuable in denominations established as contemplated by Section 2.03 or, if not so established, in denominations of \$1,000 and any integral multiple thereof. The Securities of each series shall be numbered, lettered or otherwise distinguished in such manner or in accordance with such plan as the officers of the Issuer executing the same may determine with the approval of the Trustee, as evidenced by the execution and authentication thereof. Unless otherwise indicated in a Board Resolution, Officer's Certificate or supplemental indenture for a particular series, interest will be calculated on the basis of a 360-day year of twelve 30-day months.

Each Security shall be dated the date of its authentication. The Securities of each series shall bear interest, if any, from the date, and such interest shall be payable on the dates, established as contemplated by Section 2.03.

The Person in whose name any Security of any series is registered at the close of business on any record date applicable to a particular series with respect to any interest payment date for such series shall be entitled to receive the interest, if any, payable on such interest payment date notwithstanding any transfer, exchange or conversion of such Security subsequent to the record date and prior to such interest payment date, except if and to the extent the Issuer shall default in the payment of the interest due on such interest payment date for such series, in which case such defaulted interest shall be paid to the Persons in whose names Outstanding Securities for such series are registered at the close of business on a subsequent record date (which shall be not less than five Business Days prior to the date of payment of such defaulted interest) established by notice given by mail by or on behalf of the Issuer to the Holders of Securities not less than 15 days preceding such subsequent record date. The term "record date" as used with respect to any interest payment date (except a date for payment of defaulted interest) for the Securities of any series shall mean the date specified as such in the terms of the Securities of such series established as contemplated by Section 2.03, or, if no such date is so established, if such interest payment date is the first day of a calendar month, the 15th day of the immediately preceding calendar month or, if such interest payment date is the 15th day of a calendar month, the first day of such calendar month, whether or not such record date is a Business Day.

Section 2.08 *Registration, Transfer and Exchange*. The Issuer will keep at each office or agency to be maintained for the purpose as provided in Section 3.02 for each series of Securities a register or registers in which, subject to such reasonable regulations as it may prescribe, it will provide for the registration of Securities of such series and the registration of transfer of Securities of such series. Such register shall be in written form in the English language or in any other form capable of being converted into such form within a reasonable time. At all reasonable times such register or registers shall be open for inspection by the Trustee.

Upon due presentation for registration of transfer of any Security of any series at any such office or agency to be maintained for the purpose as provided in Section 3.02, the Issuer shall execute and the Trustee shall authenticate and deliver in the name of the transferee or transferees a new Security or Securities of the same series, maturity date, interest rate and original issue date in authorized denominations for a like aggregate principal amount.

At the option of the Holder thereof, Securities of any series (except a Global Security) may be exchanged for a Security or Securities of such series having authorized denominations and an equal aggregate principal amount, upon surrender of such Securities to be exchanged at the agency of the Issuer that shall be maintained for such purpose in accordance with Section 3.02 and upon payment, if the Issuer shall so require, of the charges hereinafter provided. Whenever any Securities are so surrendered for exchange, the Issuer shall execute, and the Trustee shall authenticate and deliver, the Securities which the Holder making the exchange is entitled to receive. All Securities surrendered upon any exchange or transfer provided for in this Indenture shall be promptly cancelled and disposed of by the Trustee and the Trustee will deliver a certificate of disposition thereof to the Issuer.

All Securities presented for registration of transfer, exchange, redemption or payment shall (if so required by the Issuer or the Trustee) be duly endorsed by, or be accompanied by a written instrument or instruments of transfer in form satisfactory to the Issuer and the Trustee duly executed by, the Holder or his or her attorney duly authorized in writing.

The Issuer may require payment of a sum sufficient to cover any stamp or other tax or other governmental charge that may be imposed in connection with any exchange or registration of transfer of Securities. No service charge shall be made for any such transaction.

The Issuer shall not be required to exchange or register a transfer of (a) any Securities of any series for a period of 15 days immediately preceding the first mailing of notice of redemption of Securities of such series to be redeemed or (b) any Securities selected, called or being called for redemption, in whole or in part, except, in the case of any Security to be redeemed in part, the portion thereof not so to be redeemed.

Notwithstanding any other provision of this Section 2.08, unless and until it is exchanged in whole or in part for Securities in definitive registered form, a Global Security representing all or a portion of the Securities of a series may not be transferred except as a whole by the Depositary for such series to a nominee of such Depositary or by a nominee of such Depositary to such Depositary or another nominee of such Depositary or by such Depositary or any such nominee to a successor Depositary for such series or a nominee of such successor Depositary.

If at any time the Depositary for the Securities of a series notifies the Issuer that it is unwilling or unable to continue as Depositary for the Securities of such series or if at any time the Depositary for the Securities of a series shall no longer be eligible under Section 2.04, the Issuer shall appoint a successor Depositary with respect to the Securities of such series. If a successor Depositary for the Securities of such series is not appointed by the Issuer within 90

days after the Issuer receives such notice or becomes aware of such ineligibility, the Issuer's determination pursuant to Section 2.03 that the Securities of such series be represented by a Global Security shall no longer be effective and the Issuer will execute, and the Trustee, upon receipt of an Officer's Certificate for the authentication and delivery of definitive Securities of such series, will authenticate and deliver, Securities of such series in definitive registered form, in any authorized denominations, in an aggregate principal amount equal to the principal amount of the Global Security or Securities representing the Securities of such series, in exchange for such Global Security or Securities.

The Issuer may at any time and in its sole discretion determine that the Securities of any series issued in the form of one or more Global Securities shall no longer be represented by a Global Security or Securities. In such event the Issuer will execute, and the Trustee, upon receipt of an Officer's Certificate for the authentication and delivery of definitive Securities of such series, will authenticate and deliver, Securities of such series in definitive registered form, in any authorized denominations, in an aggregate principal amount equal to the principal amount of the Global Security or Securities representing such series, in exchange for such Global Security or Securities.

The Depositary for such Global Security may surrender such Global Security in exchange in whole or in part for Securities of the same series in definitive registered form in accordance with the two preceding paragraphs or on such other terms as are acceptable to the Issuer and such Depositary. Thereupon, the Issuer shall execute, and the Trustee shall authenticate and deliver, without service charge,

(i) to the Person specified by such Depositary a new Security or Securities of the same series, of any authorized denominations as requested by such Person, in an aggregate principal amount equal to and in exchange for such Person's beneficial interest in the Global Security; and

(ii) to such Depositary a new Global Security in a denomination equal to the difference, if any, between the principal amount of the surrendered Global Security and the aggregate principal amount of Securities authenticated and delivered pursuant to clause (i) above.

Upon the exchange of a Global Security for Securities in definitive registered form, in authorized denominations, such Global Security shall be cancelled by the Trustee. Securities in definitive registered form issued in exchange for a Global Security pursuant to this Section 2.08 shall be registered in such names and in such authorized denominations as the Depositary for such Global Security, pursuant to instructions from its direct or indirect participants or otherwise, shall instruct the Trustee. The Trustee shall deliver such Securities to or as directed by the Persons in whose names such Securities are so registered.

All Securities issued upon any transfer or exchange of Securities shall be valid obligations of the Issuer, evidencing the same debt, and entitled to the same benefits under this Indenture, as the Securities surrendered upon such transfer or exchange.

Section 2.09 *Mutilated, Defaced, Destroyed, Lost and Stolen Securities*. In case any temporary or definitive Security shall become mutilated, defaced or be destroyed, lost or stolen, the Issuer in its discretion may execute, and upon the written request of any officer of the Issuer, the Trustee shall authenticate and deliver a new Security of the same series, maturity date, interest rate and original issue date, bearing a number or other distinguishing symbol not contemporaneously outstanding, in exchange and substitution for the mutilated or defaced Security, or in lieu of and substitution for the Security so destroyed, lost or stolen. In every case the applicant for a substitute Security shall furnish to the Issuer and to the Trustee and any agent of the Issuer or the Trustee such security or indemnity as may be required by them to indemnify and defend and to save each of them harmless and, in every case of destruction, loss or theft, evidence to their satisfaction of the destruction, loss or theft of such Security and of the ownership thereof and in the case of mutilation or defacement shall surrender the Security to the Trustee.

Upon the issuance of any substitute Security, the Issuer may require the payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto and any other expenses (including the fees and expenses of the Trustee) connected therewith. In case any Security which has matured or is about to mature or has been called for redemption in full, or is being surrendered for conversion in full, shall become mutilated or defaced or be destroyed, lost or stolen, the Issuer may, instead of issuing a substitute Security (with the Holder's consent, in the case of convertible Securities), pay or authorize the payment of the same or convert, or authorize conversion of the same (without surrender thereof except in the case of a mutilated or defaced Security), if the applicant for such payment shall furnish to the Issuer and to the Trustee and any agent of the Issuer or the Trustee such security or indemnity as any of them may require to save each of them harmless, and, in every case of destruction, loss or theft, the applicant shall also furnish to the Issuer and the Trustee and any agent of the Issuer or the Trustee evidence to their satisfaction of the destruction, loss or theft of such Security and of the ownership thereof.

Every substitute Security of any series issued pursuant to the provisions of this Section by virtue of the fact that any such Security is destroyed, lost or stolen shall constitute an additional contractual obligation of the Issuer, whether or not the destroyed, lost or stolen Security shall be at any time enforceable by anyone and shall be entitled to all the benefits of (but shall be subject to all the limitations of rights set forth in) this Indenture equally and proportionately with any and all other Securities of such series duly authenticated and delivered hereunder. All Securities shall be held and owned upon the express condition that, to the extent permitted by law, the foregoing provisions are exclusive with respect to the replacement or payment or conversion of mutilated, defaced or destroyed, lost or stolen Securities and shall preclude any and all other rights or remedies notwithstanding any law or statute existing or hereafter enacted to the contrary with respect to the replacement or payment of negotiable instruments or other securities without their surrender.

Section 2.10 *Cancellation of Securities; Destruction Thereof*. All Securities surrendered for exchange for Securities of the same series or for payment, redemption, registration of transfer, conversion or for credit against any payment in respect of a sinking or analogous fund, if surrendered to the Issuer or any agent of the Issuer or the Trustee, shall be delivered to the Trustee for cancellation or, if surrendered to the Trustee, shall be cancelled by it;

and no Securities shall be issued in lieu thereof except as expressly permitted by any of the provisions of this Indenture. The Trustee shall dispose of cancelled Securities held by it and deliver a certificate of disposition to the Issuer. If the Issuer shall acquire any of the Securities, such acquisition shall not operate as a redemption or satisfaction of the Debt represented by such Securities unless and until the same are delivered to the Trustee for cancellation.

Section 2.11 *Temporary Securities*. Pending the preparation of definitive Securities for any series, the Issuer may execute and the Trustee shall authenticate and deliver temporary Securities for such series (printed, lithographed, typewritten or otherwise reproduced, in each case in form satisfactory to the Trustee). Temporary Securities of any series shall be issuable in any authorized denomination, and substantially in the form of the definitive Securities of such series but with such omissions, insertions and variations as may be appropriate for temporary Securities, all as may be determined by the Issuer with the concurrence of the Trustee as evidenced by the execution and authentication thereof. Temporary Securities may contain such reference to any provisions of this Indenture as may be appropriate. Every temporary Security shall be executed by the Issuer and be authenticated by the Trustee upon the same conditions and in substantially the same manner, and with like effect, as the definitive Securities. Without unreasonable delay the Issuer shall execute and shall furnish definitive Securities of such series and thereupon temporary Securities of such series may be surrendered in exchange therefor without charge at each office or agency to be maintained by the Issuer for that purpose pursuant to Section 3.02 and the Trustee shall authenticate and deliver in exchange for such temporary Securities of such series an equal aggregate principal amount of definitive Securities of the same series having authorized denominations. Until so exchanged, the temporary Securities of any series shall be entitled to the same benefits under this Indenture as definitive Securities of such series, unless the benefits of the temporary Securities are limited pursuant to Section 2.03.

ARTICLE 3 COVENANTS OF THE ISSUER

Section 3.01 *Payment of Principal and Interest*. The Issuer covenants and agrees for the benefit of each series of Securities that it will duly and punctually pay or cause to be paid the principal of, and interest on, each of the Securities of such series (together with any additional amounts payable pursuant to the terms of such Securities) at the place or places, at the respective times and in the manner provided in such Securities and in this Indenture. The interest on Securities (together with any additional amounts payable pursuant to the terms of such Securities) shall be payable only to or upon the written order of the Holders thereof and at the option of the Issuer may be paid by mailing checks for such interest payable to or upon the written order of such Holders at their last addresses as they appear on the Security register of the Issuer.

Section 3.02 *Offices for Payments, Etc*. The Issuer will maintain (i) in _____, an agency where the Securities of each series may be presented for payment, an agency where the Securities of each series may be presented for exchange and conversion, if applicable, as provided in this Indenture and an agency where the Securities of each series may be presented for registration of transfer as in this Indenture provided and (ii) such further agencies in such places as may be determined for the Securities of such series pursuant to Section 2.03.

The Issuer will maintain in _____, an agency where notices and demands to or upon the Issuer in respect of the Securities of any series or this Indenture may be served.

The Issuer will give to the Trustee written notice of the location of each such agency and of any change of location thereof. In case the Issuer shall fail to maintain any agency required by this Section to be located in _____, or shall fail to give such notice of the location or of any change in the location of any of the above agencies, presentations and demands may be made and notices may be served at the Corporate Trust Office of the Trustee.

The Issuer may from time to time designate one or more additional agencies where the Securities of a series may be presented for payment, where the Securities of that series may be presented for exchange or conversion, if applicable, as provided in this Indenture and pursuant to Section 2.03 and where the Securities of that series may be presented for registration of transfer as in this Indenture provided, and the Issuer may from time to time rescind any such designation, as the Issuer may deem desirable or expedient; *provided, however*, that no such designation or rescission shall in any manner relieve the Issuer of its obligation to maintain the agencies provided for in this Section. The Issuer will give to the Trustee prompt written notice of any such designation or rescission thereof.

Section 3.03 *Appointment to Fill a Vacancy in Office of Trustee*. The Issuer, whenever necessary to avoid or fill a vacancy in the office of Trustee, will appoint, in the manner provided in Section 6.10, a Trustee, so that there shall at all times be a Trustee with respect to each series of Securities hereunder.

Section 3.04 *Paying Agents*. Whenever the Issuer shall appoint a paying agent other than the Trustee with respect to the Securities of any series, it will cause such paying agent to execute and deliver to the Trustee an instrument in which such agent shall agree with the Trustee, subject to the provisions of this Section,

(a) that it will hold all sums received by it as such agent for the payment of the principal of or interest on the Securities of such series (whether such sums have been paid to it by the Issuer or by any other obligor on the Securities of such series) in trust for the benefit of the Holders of the Securities of such series or of the Trustee,

(b) that it will give the Trustee notice of any failure by the Issuer (or by any other obligor on the Securities of such series) to make any payment of the principal of or interest on the Securities of such series when the same shall be due and payable, and

(c) that at any time during the continuance of any such failure, upon the written request of the Trustee, it will forthwith pay to the Trustee all sums so held in trust by such paying agent.

The Issuer will, on or prior to each due date of the principal of or interest on the Securities of such series, deposit with the paying agent a sum sufficient to pay such principal or interest so becoming due, and (unless such paying agent is the Trustee) the Issuer will promptly notify the Trustee of any failure to take such action.

If the Issuer shall act as its own paying agent with respect to the Securities of any series, it will, on or before each due date of the principal of or interest on the Securities of such series, set aside, segregate and hold in trust for the benefit of the Holders of the Securities of such series a sum sufficient to pay such principal or interest so becoming due. The Issuer will promptly notify the Trustee of any failure to take such action.

Anything in this Section to the contrary notwithstanding, but subject to Section 10.01, the Issuer may at any time, for the purpose of obtaining a satisfaction and discharge with respect to one or more or all series of Securities hereunder, or for any other reason, pay or cause to be paid to the Trustee all sums held in trust for any such series by the Issuer or any paying agent hereunder, as required by this Section, such sums to be held by the Trustee upon the trusts herein contained.

Anything in this Section to the contrary notwithstanding, the agreement to hold sums in trust as provided in this Section is subject to the provisions of Sections 10.03 and 10.04.

Section 3.05 *Written Statement to Trustee*. So long as any Securities are Outstanding hereunder, the Issuer will deliver to the Trustee, within 120 days after the end of each fiscal year of the Issuer ending after the date hereof, a written statement covering the previous fiscal year, signed by two of its officers (which need not comply with Section 11.05), stating that in the course of the performance of their duties as officers of the Issuer they would normally have knowledge of any default by the Issuer in the performance or fulfillment of any covenant, agreement or condition contained in this Indenture, stating whether or not they have knowledge of any such default and, if so, specifying each such default of which the signers have knowledge and the nature thereof.

ARTICLE 4 SECURITYHOLDERS LISTS AND REPORTS BY THE ISSUER AND THE TRUSTEE

Section 4.01 *Issuer to Furnish Trustee Information as to Names and Addresses of Securityholders*. The Issuer covenants and agrees that it will furnish or cause to be furnished to the Trustee a list in such form as the Trustee may reasonably require of the names and addresses of the Holders of the Securities of each series pursuant to Section 312 of the Trust Indenture Act of 1939:

(a) semiannually and not more than 15 days after each record date for the payment of interest on such Securities, as hereinabove specified, as of such record date and on dates to be determined pursuant to Section 2.03 for non-interest bearing Securities in each year, and

(b) at such other times as the Trustee may request in writing, within 30 days after receipt by the Issuer of any such request as of a date not more than 15 days prior to the time such information is furnished, *provided*, that, if and so long as the Trustee shall be the Security registrar (the “**Security Registrar**”) for such series, such list shall not be required to be furnished.

Section 4.02 *Reports by the Issuer*. The Issuer covenants to comply with Section 314(a) of the Trust Indenture Act insofar as it relates to information, documentations, and other reports which the Issuer may be required to file with the Commission pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934.

Section 4.03 *Reports by the Trustee*. Any Trustee's report required under Section 313(a) of the Trust Indenture Act of 1939 shall be transmitted on or before _____ in each year following the date hereof, so long as any Securities are Outstanding hereunder, and shall be dated as of a date convenient to the Trustee but no more than 60 nor less than 45 days prior thereto. The Trustee shall comply with Sections 313(b), 313(c) and 313(d) of the Trust Indenture Act.

Section 4.04 *Preservation of Information; Communication with Securityholders*. (a) The Trustee shall preserve, in as current a form as is reasonably practicable, all information as to the names and addresses of the holders of Securities contained in the most recent list furnished to it as provided in Section 4.01 and as to the names and addresses of holders of Securities received by the Trustee in its capacity as Security Registrar (if acting in such capacity).

(b) The Trustee may destroy any list furnished to it as provided in Section 4.01 upon receipt of a new list so furnished.

(c) Securityholders may communicate as provided in Section 312(b) of the Trust Indenture Act with other Securityholders with respect to their rights under this Indenture or under the Securities. The Issuer, the Trustee, the Security Registrar and any other Person shall have the protection of Section 312(c) of the Trust Indenture Act.

ARTICLE 5
REMEDIES OF THE TRUSTEE AND SECURITYHOLDERS
ON EVENT OF DEFAULT

Section 5.01 *Event of Default Defined; Acceleration of Maturity; Waiver of Default*. "**Event of Default**", with respect to Securities of any series wherever used herein, means each one of the following events which shall have occurred and be continuing (whatever the reason for such Event of Default and whether it shall be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body):

(a) default in the payment of any installment of interest upon any of the Securities of such series as and when the same shall become due and payable, and continuance of such default for a period of 90 days (or such other period as may be established for the Securities of such series as contemplated by Section 2.03); or

(b) default in the payment of all or any part of the principal on any of the Securities of such series as and when the same shall become due and payable either at maturity, upon redemption, by declaration or otherwise, (and, if established for the Securities of such series as contemplated by Section 2.03, the continuance of such default for a specified period); or

(c) default in the performance, or breach, of any covenant or agreement of the Issuer in respect of the Securities of such series (other than a covenant or agreement in respect of the Securities of such series a default in the performance or breach of which is elsewhere in this

Section specifically dealt with), and continuance of such default or breach for a period of 90 days after there has been given, by registered or certified mail, to the Issuer by the Trustee or to the Issuer and the Trustee by the Holders of at least 25% in principal amount of the Outstanding Securities of all series affected thereby, a written notice specifying such default or breach and requiring it to be remedied and stating that such notice is a “**Notice of Default**” hereunder; or

(d) a court having jurisdiction in the premises shall enter a decree or order for relief in respect of the Issuer in an involuntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or appointing a receiver, liquidator, assignee, custodian, trustee or sequestrator (or similar official) of the Issuer or for all or substantially all of its property and assets or ordering the winding up or liquidation of its affairs, and such decree or order shall remain unstayed and in effect for a period of 90 consecutive days; or

(e) the Issuer shall commence a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or consent to the entry of an order for relief in an involuntary case under any such law, or consent to the appointment of or taking possession by a receiver, liquidator, assignee, custodian, trustee or sequestrator (or similar official) of the Issuer or for any substantial part of its property and assets, or make any general assignment for the benefit of creditors; or

(f) any other Event of Default provided for in such series of Securities.

If an Event of Default described in clauses (a), (b), (c) or (f) occurs and is continuing, then, and in each and every such case, unless the principal of all of the Securities of such series shall have already become due and payable, either the Trustee or the Holders of not less than 25% in aggregate principal amount of the Securities of such series then Outstanding hereunder (each such series voting as a separate class) by notice in writing to the Issuer (and also to the Trustee if given by Securityholders), may declare the entire principal (or, if the Securities of such series are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) of all Securities of such series and the interest accrued thereon, if any, to be due and payable immediately, and upon any such declaration the same shall become immediately due and payable. If an Event of Default described in clauses (d) or (e) occurs and is continuing, then and in each and every such case, the entire principal (or, if any Securities are Original Issue Discount Securities, such portion of the principal as may be specified in the terms thereof) of all the Securities then Outstanding and interest accrued thereon, if any, shall become immediately due and payable.

The foregoing provisions, however, are subject to the condition that if, at any time after the principal of the Securities of any series shall have been so declared due and payable, and before any judgment or decree for the payment of the moneys due shall have been obtained or entered as hereinafter provided, the Issuer shall pay or shall deposit with the Trustee a sum sufficient to pay all matured installments of interest upon all the Securities of such series and the principal of any and all Securities of such series which shall have become due otherwise than by acceleration (with interest upon such principal and, to the extent that payment of such interest is enforceable under applicable law, on overdue installments of interest, at the same rate as the rate of interest specified in the Securities of such series to the date of such payment or deposit) and such amount as shall be sufficient to cover reasonable compensation to the Trustee, its agents,

attorneys and counsel, and all other expenses and liabilities incurred, and all advances made, by the Trustee except as a result of negligence or bad faith, and if any and all Events of Default under the Indenture with respect to such series, other than the non-payment of the principal of Securities of such series which shall have become due solely by such acceleration, shall have been cured, waived or otherwise remedied as provided herein, then and in every such case the Holders of a majority in aggregate principal amount of all the Securities of such series then Outstanding, by written notice to the Issuer and to the Trustee, may waive all defaults with respect to such series and rescind and annul such declaration and its consequences, but no such waiver or rescission and annulment shall extend to or shall affect any subsequent default or shall impair any right consequent thereon.

Unless otherwise indicated in the Board Resolution, Officer's Certificate or supplemental indenture for a series of Original Issue Discount Securities, for all purposes under this Indenture, if a portion of the principal of any Original Issue Discount Securities shall have been accelerated and declared due and payable pursuant to the provisions hereof, then, from and after such declaration, unless such declaration has been rescinded and annulled, the principal amount of such Original Issue Discount Securities shall be deemed, for all purposes hereunder, to be such portion of the principal thereof as shall be due and payable as a result of such acceleration, and payment of such portion of the principal thereof as shall be due and payable as a result of such acceleration, together with interest, if any, thereon and all other amounts owing thereunder, shall constitute payment in full of such Original Issue Discount Securities.

Section 5.02 *Collection of Debt by Trustee; Trustee May Prove Debt.* The Issuer covenants that (a) in case default shall be made in the payment of any installment of interest on any of the Securities of any series when such interest shall have become due and payable, and such default shall have continued for a period of 30 days or (b) in case default shall be made in the payment of all or any part of the principal of any of the Securities of any series when the same shall have become due and payable, whether upon maturity of the Securities of such series or upon any redemption or by declaration or otherwise—then, upon demand of the Trustee, the Issuer will pay to the Trustee for the benefit of the Holders of the Securities of such series the whole amount that then shall have become due and payable on all Securities of such series for principal or interest, as the case may be (with interest to the date of such payment upon the overdue principal and, to the extent that payment of such interest is enforceable under applicable law, on overdue installments of interest at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in the Securities of such series); and, in addition thereto, such further amount as shall be sufficient to cover the costs and expenses of collection, including reasonable compensation to the Trustee and each predecessor trustee, their respective agents, attorneys and counsel, and any expenses and liabilities incurred, and all advances made, by the Trustee and each predecessor trustee except as a result of its negligence or bad faith.

In case the Issuer shall fail forthwith to pay such amounts upon such demand, the Trustee, in its own name and as trustee of an express trust, shall be entitled and empowered to institute any action or proceedings at law or in equity for the collection of the sums so due and unpaid, and may prosecute any such action or proceedings to judgment or final decree, and may enforce any such judgment or final decree against the Issuer or other obligor upon such Securities and collect in the manner provided by law out of the property of the Issuer or other obligor upon such Securities, wherever situated, the moneys adjudged or decreed to be payable.

In case there shall be pending proceedings relative to the Issuer or any other obligor upon the Securities under Title 11 of the United States Code or any other applicable Federal or state bankruptcy, insolvency or other similar law, or in case a receiver, assignee or trustee in bankruptcy or reorganization, liquidator, sequestrator or similar official shall have been appointed for or taken possession of the Issuer or its property or such other obligor or its property, or in case of any other comparable judicial proceedings relative to the Issuer or other obligor upon the Securities of any series, or to the creditors or property of the Issuer or such other obligor, the Trustee, irrespective of whether the principal of any Securities shall then be due and payable as therein expressed or by declaration or otherwise and irrespective of whether the Trustee shall have made any demand pursuant to the provisions of this Section, shall be entitled and empowered, by intervention in such proceedings or otherwise:

(i) to file and prove a claim or claims for the whole amount of principal and interest (or, if the Securities of any series are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) owing and unpaid in respect of the Securities of any series, and to file such other papers or documents as may be necessary or advisable in order to have the claims of the Trustee (including any claim for reasonable compensation to the Trustee and each predecessor trustee, and their respective agents, attorneys and counsel, and for reimbursement of all expenses and liabilities incurred, and all advances made, by the Trustee and each predecessor trustee, except as a result of negligence or bad faith) and of the Securityholders allowed in any judicial proceedings relative to the Issuer or other obligor upon the Securities of any series, or to the creditors or property of the Issuer or such other obligor,

(ii) unless prohibited by applicable law and regulations, to vote on behalf of the Holders of the Securities of any series in any election of a trustee or a standby trustee in arrangement, reorganization, liquidation or other bankruptcy or insolvency proceedings or person performing similar functions in comparable proceedings, and

(iii) to collect and receive any moneys or other property payable or deliverable on any such claims, and to distribute all amounts received with respect to the claims of the Securityholders and of the Trustee on their behalf; and any trustee, receiver or liquidator, custodian or other similar official is hereby authorized by each of the Securityholders to make payments to the Trustee, and, in the event that the Trustee shall consent to the making of payments directly to the Securityholders, to pay to the Trustee such amounts as shall be sufficient to cover reasonable compensation to the Trustee, each predecessor trustee and their respective agents, attorneys and counsel, and all other expenses and liabilities incurred, and all advances made, by the Trustee and each predecessor trustee except as a result of negligence or bad faith and all other amounts due to the Trustee or any predecessor trustee pursuant to Section 6.06.

Nothing herein contained shall be deemed to authorize the Trustee to authorize or consent to or vote for or accept or adopt on behalf of any Securityholder any plan of reorganization, arrangement, adjustment or composition affecting the Securities of any series or the rights of any Holder thereof, or to authorize the Trustee to vote in respect of the claim of any Securityholder in any such proceeding except, as aforesaid, to vote for the election of a trustee in bankruptcy or similar person.

All rights of action and of asserting claims under this Indenture, or under any of the Securities of any series, may be enforced by the Trustee without the possession of any of the Securities of such series or the production thereof on any trial or other proceedings relative thereto, and any such action or proceedings instituted by the Trustee shall be brought in its own name as trustee of an express trust, and any recovery of judgment, subject to the payment of the expenses, disbursements and compensation of the Trustee, each predecessor trustee and their respective agents and attorneys, shall be for the ratable benefit of the Holders of the Securities in respect of which such action was taken.

In any proceedings brought by the Trustee (and also any proceedings involving the interpretation of any provision of this Indenture to which the Trustee shall be a party), the Trustee shall be held to represent all the Holders of the Securities in respect to which such action was taken, and it shall not be necessary to make any Holders of such Securities parties to any such proceedings.

Section 5.03 *Application of Proceeds*. Any moneys collected by the Trustee pursuant to this Article in respect of any series shall be applied in the following order at the date or dates fixed by the Trustee and, in case of the distribution of such moneys on account of principal or interest, upon presentation of the several Securities in respect of which monies have been collected and stamping (or otherwise noting) thereon the payment, or issuing Securities of such series in reduced principal amounts in exchange for the presented Securities of like series if only partially paid, or upon surrender thereof if fully paid:

FIRST: To the payment of all amounts due to the Trustee or any predecessor trustee pursuant to Section 6.06;

SECOND: In case the principal of the Securities of such series in respect of which moneys have been collected shall not have become and be then due and payable, to the payment of interest on the Securities of such series in default in the order of the maturity of the installments of such interest, with interest (to the extent that such interest has been collected by the Trustee) upon the overdue installments of interest, to the extent permitted by applicable law, at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in such Securities, such payments to be made ratably to the Persons entitled thereto, without discrimination or preference;

THIRD: In case the principal of the Securities of such series in respect of which moneys have been collected shall have become and shall be then due and payable, to the payment of the whole amount then owing and unpaid upon all the Securities of such series for principal and interest, with interest upon the overdue principal, and (to the extent that such interest has been collected by the Trustee) upon overdue installments of interest, to the extent

permitted by applicable law, at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in the Securities of such series; and in case such moneys shall be insufficient to pay in full the whole amount so due and unpaid upon the Securities of such series, then to the payment of such principal and interest, without preference or priority of principal over interest, or of interest over principal, or of any installment of interest over any other installment of interest, or of any Security of such series over any other Security of such series, ratably to the aggregate of such principal and accrued and unpaid interest; and

FOURTH: To the payment of the remainder, if any, to the Issuer or any other Person lawfully entitled thereto.

Section 5.04 *Suits for Enforcement*. In case an Event of Default has occurred, has not been waived and is continuing, the Trustee may in its discretion proceed to protect and enforce the rights vested in it by this Indenture by such appropriate judicial proceedings as the Trustee shall deem most effectual to protect and enforce any such rights, either at law or in equity or in bankruptcy or otherwise, whether for the specific enforcement of any covenant or agreement contained in this Indenture or in aid of the exercise of any power granted in this Indenture or to enforce any other legal or equitable right vested in the Trustee by this Indenture or by law.

Section 5.05 *Restoration of Rights on Abandonment of Proceedings*. In case the Trustee shall have proceeded to enforce any right under this Indenture and such proceedings shall have been discontinued or abandoned for any reason, or shall have been determined adversely to the Trustee, then and in every such case (subject to any determination in such proceeding) the Issuer and the Trustee shall be restored respectively to their former positions and rights hereunder, and all rights, remedies and powers of the Issuer, the Trustee and the Securityholders shall continue as though no such proceedings had been taken.

Section 5.06 *Limitations on Suits by Securityholders*. No Holder of any Security of any series shall have any right by virtue or by availing of any provision of this Indenture to institute any action or proceeding at law or in equity or in bankruptcy or otherwise upon or under or with respect to this Indenture, or for the appointment of a trustee, receiver, liquidator, custodian or other similar official or for any other remedy hereunder, unless such Holder previously shall have given to the Trustee written notice of default and of the continuance thereof, as hereinbefore provided, and unless also the Holders of not less than 25% in aggregate principal amount of the Securities of such series then Outstanding shall have made written request upon the Trustee to institute such action or proceedings in its own name as trustee hereunder and shall have offered to the Trustee such reasonable indemnity as it may require against the costs, expenses and liabilities to be incurred therein or thereby and the Trustee for 60 days after its receipt of such notice, request and offer of indemnity shall have failed to institute any such action or proceeding and no direction inconsistent with such written request shall have been given to the Trustee pursuant to Section 5.09; it being understood and intended, and being expressly covenanted by the Holder of every Security with every other Holder and the Trustee, that no one or more Holders of Securities of any series shall have any right in any manner whatever by virtue or by availing of any provision of this Indenture to affect, disturb or prejudice the rights of any other such Holder of Securities, or to obtain or seek to obtain priority over or preference to any other such Holder or to enforce any right under this Indenture, except in the manner herein provided and for the equal, ratable and common benefit of all Holders of

Securities of the applicable series. For the protection and enforcement of the provisions of this Section, each and every Securityholder and the Trustee shall be entitled to such relief as can be given either at law or in equity.

Section 5.07 *Unconditional Right of Securityholders to Institute Certain Suits*. Notwithstanding any other provision in this Indenture and any provision of any Security, the right of any Holder of any Security to receive payment of the principal of and interest on such Security on or after the respective due dates expressed in such Security in accordance with the terms hereof and thereof, or to institute suit for the enforcement of any such payment on or after such respective dates, shall not be impaired or affected without the consent of such Holder, it being understood and intended, and being expressly covenanted by the Holder of every Security with every other Holder and the Trustee, that no one or more Holders of Securities of any series shall have any right in any manner whatever by virtue or by availing of any provision of this Indenture to affect, disturb or prejudice the rights of any other such Holder of Securities, or to obtain or seek to obtain priority over or preference to any other such Holder or to enforce any right under this Indenture, except in the manner herein provided and for the equal, ratable and common benefit of all Holders of Securities of the applicable series. For the protection and enforcement of the provisions of this Section, each and every Securityholder and the Trustee shall be entitled to such relief as can be given either at law or in equity.

Section 5.08 *Powers and Remedies Cumulative; Delay or Omission Not Waiver of Default*. Except as provided in Section 5.06, no right or remedy herein conferred upon or reserved to the Trustee or to the Holders of Securities is intended to be exclusive of any other right or remedy, and every right and remedy shall, to the extent permitted by law, be cumulative and in addition to every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other appropriate right or remedy.

No delay or omission of the Trustee or of any Holder of Securities to exercise any right or power accruing upon any Event of Default occurring and continuing as aforesaid shall impair any such right or power or shall be construed to be a waiver of any such Event of Default or an acquiescence therein; and, subject to Section 5.06, every power and remedy given by this Indenture or by law to the Trustee or to the Holders of Securities may be exercised from time to time, and as often as shall be deemed expedient, by the Trustee or by the Holders of Securities.

Section 5.09 *Control by Holders of Securities*. The Holders of a majority in aggregate principal amount of the Securities of each series affected (with each series voting as a separate class) at the time Outstanding shall have the right to direct the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred on the Trustee with respect to the Securities of such series by this Indenture; *provided*, that such direction shall not be otherwise than in accordance with law and the provisions of this Indenture and provided, further, that (subject to the provisions of Section 6.01) the Trustee shall have the right to decline to follow any such direction if the Trustee, being advised by counsel, shall determine that the action or proceeding so directed may not lawfully be taken or if the Trustee in good faith by its board of directors, the executive committee, or a trust committee of directors or Responsible Officers of the Trustee shall determine that the action or

proceedings so directed would involve the Trustee in personal liability or if the Trustee in good faith shall so determine that the actions or forbearances specified in or pursuant to such direction would be unduly prejudicial to the interests of Holders of the Securities of all series so affected not joining in the giving of said direction, it being understood that (subject to Section 6.01) the Trustee shall have no duty to ascertain whether or not such actions or forbearances are unduly prejudicial to such Holders.

Nothing in this Indenture shall impair the right of the Trustee in its discretion to take any action deemed proper by the Trustee and which is not inconsistent with such direction or directions by Securityholders.

Section 5.10 *Waiver of Past Defaults*. The Holders of a majority in aggregate principal amount of the Securities of such series at the time Outstanding, by notice to the Trustee, may on behalf of the Holders of all the Securities of such series waive any existing default in the performance of any of the covenants contained herein or established pursuant to Section 2.03 with respect to such series and its consequences, except an uncured default in the payment of the principal of, or interest on, any of the Securities of that series as and when the same shall become due by the terms of such Securities; and may rescind an acceleration and its consequences, including any related payment default that resulted from such acceleration. In the case of any such waiver, the Issuer, the Trustee and the Holders of the Securities of such series shall be restored to their former positions and rights hereunder, respectively, such default shall cease to exist and be deemed to have been cured and not to have occurred, and any Event of Default arising therefrom shall be deemed to have been cured, and not to have occurred for every purpose of this Indenture; but no such waiver shall extend to any subsequent or other default or Event of Default or impair any right consequent thereon.

Section 5.11 *Trustee to Give Notice of Default*. The Trustee shall, within 90 days after the occurrence of a default with respect to the Securities of any series, give notice of all defaults with respect to that series known to the Trustee to all Holders of Securities of such series in the manner and to the extent provided in Section 4.03, unless in each case such defaults shall have been cured before the mailing or publication of such notice (the term “**defaults**” for the purpose of this Section being hereby defined to mean any event or condition which is, or with notice or lapse of time or both would become, an Event of Default); *provided*, that, except in the case of default in the payment of the principal of or interest on any of the Securities of such series, or in the payment of any sinking fund installment on such series, the Trustee shall be protected in withholding such notice if and so long as the board of directors, the executive committee, or a trust committee of directors or trustees and/or Responsible Officers of the Trustee in good faith determines that the withholding of such notice is in the interests of the Securityholders of such series.

Section 5.12 *Right of Court to Require Filing of Undertaking to Pay Costs*. All parties to this Indenture agree, and each Holder of any Security by his or her acceptance thereof shall be deemed to have agreed, that any court may in its discretion require, in any suit for the enforcement of any right or remedy under this Indenture or in any suit against the Trustee for any action taken, suffered or omitted by it as Trustee, the filing by any party litigant in such suit of an undertaking to pay the costs of such suit, and that such court may in its discretion assess reasonable costs, including reasonable attorneys’ fees, against any party litigant in such suit.

having due regard to the merits and good faith of the claims or defenses made by such party litigant; but the provisions of this Section shall not apply to any suit instituted by the Trustee, to any suit instituted by any Securityholder or group of Securityholders of any series holding in the aggregate more than 10% in aggregate principal amount of the Securities of such series, or to any suit instituted by any Securityholder for the enforcement of the payment of the principal of or interest on any Security of such series, on or after the respective due dates expressed in such Security or established pursuant to this Indenture.

ARTICLE 6
CONCERNING THE TRUSTEE

Section 6.01 *Duties and Responsibilities of the Trustee; During Default; Prior to Default.* With respect to the Holders of any series of Securities issued hereunder, the Trustee, prior to the occurrence of an Event of Default with respect to the Securities of a particular series and after the curing or waiving of all Events of Default which may have occurred with respect to such series, undertakes to perform such duties and only such duties as are specifically set forth in this Indenture. In case an Event of Default with respect to the Securities of a series has occurred (which has not been cured or waived), the Trustee shall exercise such of the rights and powers vested in it by this Indenture, and use the same degree of care and skill in their exercise, as a prudent person would exercise or use under the circumstances in the conduct of his or her own affairs.

No provision of this Indenture shall be construed to relieve the Trustee from liability for its own negligent action, its own negligent failure to act or its own willful misconduct.

Section 6.02 *Certain Rights of the Trustee.* In furtherance of and subject to the Trust Indenture Act of 1939 and subject to Section 6.01:

(a) in the absence of bad faith on the part of the Trustee, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon any statements, certificates or opinions furnished to the Trustee and conforming to the requirements of this Indenture; but, in the case of any such statements, certificates or opinions which by any provision hereof are specifically required to be furnished to the Trustee, the Trustee shall be under a duty to examine the same to determine whether or not they conform to the requirements of this Indenture;

(b) the Trustee shall not be liable for any error of judgment made in good faith by a Responsible Officer or Responsible Officers of the Trustee, unless it shall be proved that the Trustee was negligent in ascertaining the pertinent facts;

(c) the Trustee shall not be liable with respect to any action taken or omitted to be taken by it in good faith in accordance with the direction of the Holders pursuant to Section 5.09 relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, under this Indenture;

(d) none of the provisions contained in this Indenture shall require the Trustee to expend or risk its own funds or otherwise incur personal financial liability in the performance

of any of its duties or in the exercise of any of its rights or powers if there shall be reasonable ground for believing that the repayment of such funds or adequate indemnity against such liability is not reasonably assured to it;

(e) the Trustee may rely and shall be protected in acting or refraining from acting upon any resolution, Officer's Certificate or any other certificate, statement, instrument, opinion, report, notice, request, consent, order, bond, debenture, note, security or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties;

(f) any request, direction, order or demand of the Issuer mentioned herein shall be sufficiently evidenced by an Officer's Certificate (unless other evidence in respect thereof be herein specifically prescribed); and any resolution of the Board of Directors may be evidenced to the Trustee by a copy thereof certified by the secretary or an assistant secretary of the Issuer;

(g) the Trustee may consult with counsel and any advice or Opinion of Counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted to be taken by it hereunder in good faith and in accordance with such advice or Opinion of Counsel;

(h) the Trustee shall be under no obligation to exercise any of the trusts or powers vested in it by this Indenture at the request, order or direction of any of the Securityholders pursuant to the provisions of this Indenture, unless such Securityholders shall have offered to the Trustee reasonable security or indemnity against the costs, expenses and liabilities which might be incurred therein or thereby;

(i) the Trustee shall not be liable for any action taken or omitted by it in good faith and believed by it to be authorized or within the discretion, rights or powers conferred upon it by this Indenture;

(j) prior to the occurrence of an Event of Default hereunder and after the curing or waiving of all Events of Default, the Trustee shall not be bound to make any investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, consent, order, approval, appraisal, bond, debenture, note, security, or other paper or document unless requested in writing so to do by the Holders of not less than a majority in aggregate principal amount of the Securities of all series affected then Outstanding; *provided*, that, if the payment within a reasonable time to the Trustee of the costs, expenses or liabilities likely to be incurred by it in the making of such investigation is, in the opinion of the Trustee, not reasonably assured to the Trustee by the security afforded to it by the terms of this Indenture, the Trustee may require reasonable indemnity against such expenses or liabilities as a condition to proceeding; the reasonable expenses of every such investigation shall be paid by the Issuer or, if paid by the Trustee or any predecessor trustee, shall be repaid by the Issuer upon demand; and

(k) the Trustee may execute any of the trusts or powers hereunder or perform any duties hereunder either directly or by or through agents or attorneys not regularly in its employ and the Trustee shall not be responsible for any misconduct or negligence on the part of any such agent or attorney appointed with due care by it hereunder.

Section 6.03 *Trustee Not Responsible for Recitals, Disposition of Securities or Application of Proceeds Thereof*. The recitals contained herein and in the Securities, except the Trustee's certificates of authentication, shall be taken as the statements of the Issuer, and the Trustee assumes no responsibility for the correctness of the same. The Trustee makes no representation as to the validity or sufficiency of this Indenture or of the Securities. The Trustee shall not be accountable for the use or application by the Issuer of any of the Securities or of the proceeds thereof.

Section 6.04 *Trustee and Agents May Hold Securities; Collections, Etc.* The Trustee or any agent of the Issuer or the Trustee, in its individual or any other capacity, may become the owner or pledgee of Securities with the same rights it would have if it were not the Trustee or such agent and may otherwise deal with the Issuer and receive, collect, hold and retain collections from the Issuer with the same rights it would have if it were not the Trustee or such agent.

Section 6.05 *Moneys Held by Trustee*. Subject to the provisions of Section 10.04 hereof, all moneys received by the Trustee shall, until used or applied as herein provided, be held in trust for the purposes for which they were received, but need not be segregated from other funds except to the extent required by mandatory provisions of law. Neither the Trustee nor any agent of the Issuer or the Trustee shall be under any liability for interest on any moneys received by it hereunder.

Section 6.06 *Compensation and Indemnification of Trustee and Its Prior Claim*. The Issuer covenants and agrees to pay to the Trustee from time to time, and the Trustee shall be entitled to, such reasonable compensation (which shall not be limited by any provision of law in regard to the compensation of a trustee of an express trust) as the Issuer and the Trustee may from time to time agree in writing and, except as otherwise expressly provided herein, the Issuer covenants and agrees to pay or reimburse the Trustee and each predecessor trustee upon its request for all reasonable expenses, disbursements and advances incurred or made by or on behalf of it in accordance with any of the provisions of this Indenture (including the reasonable compensation and the expenses and disbursements of its counsel and of all agents and other persons not regularly in its employ) except any such expense, disbursement or advance as may arise from its negligence or bad faith. The Issuer also covenants to indemnify the Trustee and each predecessor trustee for, and to hold it harmless against, any loss, liability or expense incurred without negligence or bad faith on its part, arising out of or in connection with the acceptance or administration of this Indenture or the trusts hereunder and its duties hereunder, including the costs and expenses of defending itself against or investigating any claim of liability in the premises. The obligations of the Issuer under this Section to compensate and indemnify the Trustee and each predecessor trustee and to pay or reimburse the Trustee and each predecessor trustee for expenses, disbursements and advances shall constitute additional indebtedness hereunder and shall survive the satisfaction and discharge of this Indenture. Such additional indebtedness shall be a senior claim to that of the Securities upon all property and funds held or collected by the Trustee as such, except funds held in trust for the benefit of the Holders of particular Securities, and the Securities are hereby subordinated to such senior claim.

Section 6.07 *Right of Trustee to Rely on Officer's Certificate, Etc.* Subject to Sections 6.01 and 6.02, whenever in the administration of the trusts of this Indenture the Trustee shall deem it necessary or desirable that a matter be proved or established prior to taking or suffering or omitting any action hereunder, such matter (unless other evidence in respect thereof be herein specifically prescribed) may, in the absence of negligence or bad faith on the part of the Trustee, be deemed to be conclusively proved and established by an Officer's Certificate delivered to the Trustee, and such certificate, in the absence of negligence or bad faith on the part of the Trustee, shall be full warrant to the Trustee for any action taken, suffered or omitted by it under the provisions of this Indenture upon the faith thereof.

Section 6.08 *Disqualification; Conflicting Interests.* If the Trustee has or shall acquire any "conflicting interest" within the meaning of Section 310(b) of the Trust Indenture Act, the Trustee and the Issuer shall in all respects comply with the provisions of Section 310(b) of the Trust Indenture Act.

Section 6.09 *Persons Eligible for Appointment as Trustee.* The Trustee for each series of Securities hereunder shall at all times be a corporation having a combined capital and surplus of at least \$50,000,000 and shall be eligible in accordance with the provisions of Section 310(a) of the Trust Indenture Act of 1939. If such corporation publishes reports of condition at least annually, pursuant to law or to the requirements of a Federal, State or District of Columbia supervising or examining authority, then, for the purposes of this Section, the combined capital and surplus of such corporation shall be deemed to be its combined capital and surplus as set forth in its most recent report of condition so published.

Section 6.10 *Resignation and Removal; Appointment of Successor Trustee.* (a) The Trustee, or any trustee or trustees hereafter appointed, may at any time resign with respect to one or more or all series of Securities by giving written notice of resignation to the Issuer and by mailing notice of such resignation to the Holders of then Outstanding Securities of each series affected at their addresses as they shall appear on the Security register. Upon receiving such notice of resignation, the Issuer shall promptly appoint a successor trustee or trustees with respect to the applicable series by written instrument in duplicate, executed by authority of the Board of Directors, one copy of which instrument shall be delivered to the resigning Trustee and one copy to the successor trustee or trustees. If no successor trustee shall have been so appointed with respect to any series and have accepted appointment within 30 days after the mailing of such notice of resignation, the resigning trustee may petition any court of competent jurisdiction for the appointment of a successor trustee, or any Securityholder who has been a bona fide Holder of a Security or Securities of the applicable series for at least six months may, on behalf of himself or herself and all others similarly situated, petition any such court for the appointment of a successor trustee. Such court may thereupon, after such notice, if any, as it may deem proper and prescribe, appoint a successor trustee.

(b) In case at any time any of the following shall occur:

(i) the Trustee shall fail to comply with the provisions of Section 310(b) of the Trust Indenture Act of 1939 with respect to any series of Securities after written request therefor by the Issuer or by any Securityholder who has been a bona fide Holder of a Security or Securities of such series for at least six months; or

(ii) the Trustee shall cease to be eligible in accordance with the provisions of Section 310(a) of the Trust Indenture Act of 1939 and shall fail to resign after written request therefor by the Issuer or by any Securityholder; or

(iii) the Trustee shall become incapable of acting with respect to any series of Securities, or shall be adjudged bankrupt or insolvent, or a receiver or liquidator of the Trustee or of its property shall be appointed, or any public officer shall take charge or control of the Trustee or of its property or affairs for the purpose of rehabilitation, conservation or liquidation;

then, in any such case, (A) the Issuer may remove the Trustee with respect to the applicable series of Securities and appoint a successor trustee for such series by written instrument, in duplicate, executed by order of the Board of Directors, one copy of which instrument shall be delivered to the Trustee so removed and one copy to the successor trustee, or, (B) subject to Section 315(e) of the Trust Indenture Act of 1939, any Securityholder who has been a bona fide Holder of a Security or Securities of such series for at least six months may on behalf of himself or herself and all others similarly situated, petition any court of competent jurisdiction for the removal of the Trustee and the appointment of a successor trustee with respect to such series. Such court may thereupon, after such notice, if any, as it may deem proper and prescribe, remove the Trustee and appoint a successor trustee.

(c) The Holders of a majority in aggregate principal amount of the Securities of each series at the time Outstanding may at any time remove the Trustee with respect to Securities of such series and, with the consent of the Issuer, appoint a successor trustee with respect to the Securities of such series by delivering to the Trustee so removed, to the successor trustee so appointed and to the Issuer the evidence provided for in Section 7.01 of the action in that regard taken by the Securityholders.

(d) Any resignation or removal of the Trustee with respect to any series and any appointment of a successor trustee with respect to such series pursuant to any of the provisions of this Section 6.10 shall become effective upon acceptance of appointment by the successor trustee as provided in Section 6.11.

Section 6.11 *Acceptance of Appointment by Successor Trustee.* Any successor trustee appointed as provided in Section 6.10 shall execute and deliver to the Issuer and to its predecessor trustee an instrument accepting such appointment hereunder, and thereupon the resignation or removal of the predecessor trustee with respect to all or any applicable series shall become effective and such successor trustee, without any further act, deed or conveyance, shall become vested with all rights, powers, duties and obligations with respect to such series of its predecessor hereunder, with like effect as if originally named as trustee for such series hereunder; but, nevertheless, on the written request of the Issuer or of the successor trustee, upon payment of its charges then unpaid, the trustee ceasing to act shall, subject to Section 10.04, pay over to the successor trustee all moneys at the time held by it hereunder and shall execute and deliver an instrument transferring to such successor trustee all such rights, powers, duties and

obligations. Upon request of any such successor trustee, the Issuer shall execute any and all instruments in writing for more fully and certainly vesting in and confirming to such successor trustee all such rights and powers. Any trustee ceasing to act shall, nevertheless, retain a prior claim upon all property or funds held or collected by such trustee to secure any amounts then due it pursuant to the provisions of Section 6.06.

If a successor trustee is appointed with respect to the Securities of one or more (but not all) series, the Issuer, the predecessor trustee and each successor trustee with respect to the Securities of any applicable series shall execute and deliver an indenture supplemental hereto which shall contain such provisions as shall be deemed necessary or desirable to confirm that all the rights, powers, trusts and duties of the predecessor trustee with respect to the Securities of any series as to which the predecessor trustee is not retiring shall continue to be vested in the predecessor trustee, and shall add to or change any of the provisions of this Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one trustee, it being understood that nothing herein or in such supplemental indenture shall constitute such trustees co-trustees of the same trust and that each such trustee shall be trustee of a trust or trusts under separate indentures.

No successor trustee with respect to any series of Securities shall accept appointment as provided in this Section 6.11 unless at the time of such acceptance such successor trustee shall be qualified under the provisions of Section 310(b) of the Trust Indenture Act of 1939 and eligible under the provisions of Section 310(a) of the Trust Indenture Act of 1939.

Upon acceptance of appointment by any successor trustee as provided in this Section 6.11, the Issuer shall mail notice thereof to the Holders of Securities of each series affected, by mailing such notice to such Holders at their addresses as they shall appear on the Security register. If the acceptance of appointment is substantially contemporaneous with the resignation, then the notice called for by the preceding sentence may be combined with the notice called for by Section 6.10. If the Issuer fails to mail such notice within ten days after acceptance of appointment by the successor trustee, the successor trustee shall cause such notice to be given at the expense of the Issuer.

Section 6.12 *Merger, Conversion, Consolidation or Succession to Business of Trustee*. Any corporation into which the Trustee may be merged or converted or with which it may be consolidated, or any corporation resulting from any merger, conversion or consolidation to which the Trustee shall be a party, or any corporation succeeding to the corporate trust business of the Trustee, shall be the successor of the Trustee hereunder; *provided*, that such corporation shall be qualified under the provisions of Section 310(b) of the Trust Indenture Act of 1939 and eligible under the provisions of Section 310(a) of the Trust Indenture Act of 1939, without the execution or filing of any paper or any further act on the part of any of the parties hereto, anything herein to the contrary notwithstanding.

In case, at the time such successor to the Trustee shall succeed to the trusts created by this Indenture, any of the Securities of any series shall have been authenticated but not delivered, any such successor to the Trustee may adopt the certificate of authentication of any predecessor trustee and deliver such Securities so authenticated; and, in case at that time any of the Securities of any series shall not have been authenticated, any successor to the Trustee may authenticate

such Securities either in the name of any predecessor hereunder or in the name of the successor trustee; and in all such cases such certificate shall have the full force which it is anywhere in the Securities of such series or in this Indenture provided that the certificate of the Trustee shall have; provided, that the right to adopt the certificate of authentication of any predecessor trustee or to authenticate Securities of any series in the name of any predecessor trustee shall apply only to its successor or successors by merger, conversion or consolidation.

Section 6.13 *Preferential Collection of Claims Against the Issuer.* The Trustee shall comply with Section 311(a) of the Trust Indenture Act, excluding any creditor relationship described in Section 311(b) of the Trust Indenture Act. A Trustee who has resigned or been removed shall be subject to Section 311(a) of the Trust Indenture Act to the extent included therein.

ARTICLE 7
CONCERNING THE SECURITYHOLDERS

Section 7.01 *Evidence of Action Taken by Securityholders.* Any request, demand, authorization, direction, notice, consent, waiver or other action provided by this Indenture to be given or taken by a specified percentage in principal amount of the Securityholders of any or all series may be embodied in and evidenced by one or more instruments of substantially similar tenor signed by such specified percentage of Securityholders in person or by agent duly appointed in writing; and, except as herein otherwise expressly provided, such action shall become effective when such instrument or instruments are delivered to the Trustee. Proof of execution of any instrument or of a writing appointing any such agent shall be sufficient for any purpose of this Indenture and (subject to Sections 6.01 and 6.02) conclusive in favor of the Trustee and the Issuer, if made in the manner provided in this Article.

Section 7.02 *Proof of Execution of Instruments and of Holding of Securities.* Subject to Sections 6.01 and 6.02, the execution of any instrument by a Holder or his agent or proxy may be proved in accordance with such reasonable rules and regulations as may be prescribed by the Trustee or in such manner as shall be satisfactory to the Trustee. The holding of Securities shall be proved by the Security register or by a certificate of the registrar thereof. The Issuer may set a record date for purposes of determining the identity of Holders of any series entitled to vote or consent to any action referred to in Section 7.01, which record date may be set at any time or from time to time by notice to the Trustee, for any date or dates (in the case of any adjournment or reconsideration) not more than 60 days nor less than five days prior to the proposed date of such vote or consent, and thereafter, notwithstanding any other provisions hereof, only Holders of such series of record on such record date shall be entitled to so vote or give such consent or revoke such vote or consent. Notice of such record date may be given before or after any request for any action referred to in Section 7.01 is made by the Issuer.

Section 7.03 *Holders to Be Treated as Owners.* The Issuer, the Trustee and any agent of the Issuer or of the Trustee may deem and treat the Person in whose name any Security shall be registered upon the Security register for such series as the absolute owner of such Security (whether or not such Security shall be overdue and notwithstanding any notation of ownership or other writing thereon) for the purpose of receiving payment of or on account of the principal of, and, subject to the provisions of this Indenture, interest on, such Security and for all other

purposes; and neither the Issuer nor the Trustee nor any agent of the Issuer or the Trustee shall be affected by any notice to the contrary. All such payments so made to any such Person, or upon his or her order, shall be valid, and, to the extent of the sum or sums so paid, effectual to satisfy and discharge the liability for moneys payable.

Section 7.04 *Securities Owned by Issuer Deemed Not Outstanding*. In determining whether the Holders of the requisite aggregate principal amount of Outstanding Securities of any or all series have concurred in any direction, consent or waiver under this Indenture, Securities which are owned by the Issuer or any other obligor on the Securities with respect to which such determination is being made or by any Person directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer or any other obligor on the Securities with respect to which such determination is being made shall be disregarded and deemed not to be Outstanding for the purpose of any such determination, except that, for the purpose of determining whether the Trustee shall be protected in relying on any such direction, consent or waiver, only Securities which the Trustee knows are so owned shall be so disregarded. Securities so owned which have been pledged in good faith may be regarded as Outstanding if the pledgee establishes to the satisfaction of the Trustee the pledgee's right so to act with respect to such Securities and that the pledgee is not the Issuer or any other obligor upon the Securities or any Person directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer or any other obligor on the Securities. In case of a dispute as to such right, the advice of counsel shall be full protection in respect of any decision made by the Trustee in accordance with such advice.

Section 7.05 *Right of Revocation of Action Taken*. At any time prior to (but not after) the evidencing to the Trustee, as provided in Section 7.01, of the taking of any action by the Holders of the percentage in aggregate principal amount of the Securities of any or all series, as the case may be, specified in this Indenture in connection with such action, any Holder of a Security the serial number of which is shown by the evidence to be included among the serial numbers of the Securities the Holders of which have consented to such action may, by filing written notice at the Corporate Trust Office and upon proof of holding as provided in this Article, revoke such action so far as concerns such Security. Except as aforesaid, any such action taken by the Holder of any Security shall be conclusive and binding upon such Holder and upon all future Holders and owners of such Security and of any Securities issued in exchange or substitution therefor or on registration of transfer thereof, irrespective of whether or not any notation in regard thereto is made upon any such Security. Any action taken by the Holders of the percentage in aggregate principal amount of the Securities of any or all series, as the case may be, specified in this Indenture in connection with such action shall be conclusively binding upon the Issuer, the Trustee and the Holders of all the Securities affected by such action.

ARTICLE 8 SUPPLEMENTAL INDENTURES

Section 8.01 *Supplemental Indentures Without Consent of Securityholders*. The Issuer, when authorized by a resolution of its Board of Directors, and the Trustee may from time to time and at any time, without the consent of any of the Securityholders, enter into an indenture or indentures supplemental hereto in form satisfactory to the Trustee for one or more of the following purposes:

- (a) to convey, transfer, assign, mortgage or pledge to the Trustee as security for the Securities of one or more series any property or assets;

(b) to evidence the succession of a corporation, limited liability company, partnership or trust to the Issuer, or successive successions, and the assumption by such successor of the covenants, agreements and obligations of the Issuer pursuant to, or to otherwise comply with, Article 9;

(c) to comply with the requirements of the Commission in order to effect or maintain the qualification of this Indenture under the Trust Indenture Act of 1939, as amended;

(d) to add to the covenants of the Issuer such further covenants, restrictions, conditions or provisions as its Board of Directors and the Trustee shall consider to be for the protection of the Holders of Securities, and to make the occurrence, or the occurrence and continuance, of a default in any such additional covenants, restrictions, conditions or provisions an Event of Default permitting the enforcement of all or any of the several remedies provided in this Indenture as herein set forth; *provided*, that in respect of any such additional covenant, restriction, condition or provision such supplemental indenture may provide for a particular period of grace after default (which period may be shorter or longer than that allowed in the case of other defaults) or may provide for an immediate enforcement upon such an Event of Default or may limit the remedies available to the Trustee upon such an Event of Default or may limit the right of the Holders of a majority in aggregate principal amount of the Securities of such series to waive such an Event of Default;

(e) to cure any ambiguity, defect or inconsistency, or to conform this Indenture or any supplemental indenture to the description of the Securities set forth in any prospectus or prospectus supplement related to such series of Securities;

(f) to provide for or add guarantors for the Securities of one or more series;

(g) to establish the form or terms of Securities of any series as permitted by Sections 2.01 and 2.03;

(h) to evidence and provide for the acceptance of appointment hereunder by a successor trustee with respect to the Securities of one or more series and to add to or change any of the provisions of this Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one trustee, pursuant to the requirements of Section 6.11;

(i) to add to, delete from or revise the conditions, limitations and restrictions on the authorized amount, terms, purposes of issue, authentication and delivery of any series of Securities, as herein set forth;

(j) to make any change to the Securities of any series so long as no Securities of such series are Outstanding; and

(k) to make any other change that does not adversely affect the interests of the Holders of the Securities in any material respect.

The Trustee shall join with the Issuer in the execution of any such supplemental indenture, to make any further appropriate agreements and stipulations which may be therein contained and to accept the conveyance, transfer, assignment, mortgage or pledge of any property thereunder, but the Trustee shall not be obligated to enter into any such supplemental indenture which affects the Trustee's own rights, duties or immunities under this Indenture or otherwise.

Any supplemental indenture authorized by the provisions of this Section may be executed without the consent of the Holders of any of the Securities at the time Outstanding, notwithstanding any of the provisions of Section 8.02.

Section 8.02 *Supplemental Indentures With Consent of Securityholders*. With the consent (evidenced as provided in Article 7) of the Holders of not less than a majority in aggregate principal amount of the Securities at the time Outstanding of one or more series affected by such supplemental indenture (voting as separate series), the Issuer, when authorized by a resolution of the Board of Directors, and the Trustee may, from time to time and at any time, enter into an indenture or indentures supplemental hereto for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of this Indenture or of any supplemental indenture or of modifying in any manner the rights of the Holders of the Securities of each such consenting series; *provided*, that no such supplemental indenture shall, without the consent of the Holder of each Security so affected, (a) extend the final maturity of any Security, or reduce the principal amount thereof, or reduce the rate or extend the time of payment of interest thereon, or reduce any amount payable on redemption thereof, or make the principal thereof (including any amount in respect of original issue discount) or interest thereon payable in any currency other than that provided in the Securities or in accordance with the terms thereof, or reduce the amount of the principal of an Original Issue Discount Security that would be due and payable upon an acceleration of the maturity thereof pursuant to Section 5.01 or the amount thereof provable in bankruptcy pursuant to Section 5.02, or (b) waive an uncured default in the payment of principal of any Security or interest thereon (except in the case of a rescission of acceleration of the Securities of such series by the Holders of at least a majority in aggregate principal amount of the Securities of such series at the time Outstanding and a waiver of the payment default that resulted from such acceleration) or change a provision related to the waiver of past defaults or changes or impair the right of any Securityholder to institute suit for the payment or conversion thereof or, if the Securities provide therefor, any right of repayment at the option of the Securityholder, or (c) modify any of the provisions of this section except to increase any required percentage or to provide that certain other provisions cannot be modified or waived without the consent of the Holder of each Security so affected, or (d) reduce the aforesaid percentage of Securities of any series, the consent of the Holders of which is required for any such supplemental indenture or the consent of Holders of which is required for any modification, amendment or waiver of compliance with certain provisions of this Indenture or certain defaults hereunder and their consequences provided for in this Indenture.

A supplemental indenture which changes or eliminates any covenant, Event of Default or other provision of this Indenture (1) that has been expressly included solely for the benefit of one or more particular series of Securities, if any, or (2) which modifies the rights of Holders of Securities of one or more series with respect to any covenant, Event of Default or provision, shall be deemed not to affect the rights under this Indenture of the Holders of Securities of any other series with respect to which such covenant, Event of Default or other provision has not been included or so modified.

Upon the request of the Issuer, accompanied by a Board Resolution authorizing the execution of any such supplemental indenture, and upon the filing with the Trustee of evidence of the consent of Securityholders as aforesaid and other documents, if any, required by Section 7.01, the Trustee shall join with the Issuer in the execution of such supplemental indenture unless such supplemental indenture affects the Trustee's own rights, duties or immunities under this Indenture or otherwise, in which case the Trustee may in its discretion, but shall not be obligated to, enter into such supplemental indenture.

It shall not be necessary for the consent of the Securityholders under this Section to approve the particular form of any proposed supplemental indenture, but it shall be sufficient if such consent shall approve the substance thereof.

Promptly after the execution by the Issuer and the Trustee of any supplemental indenture pursuant to the provisions of this Section, the Trustee shall give a notice thereof to the Holders of then Outstanding Securities of each series affected thereby, by mailing a notice thereof by first-class mail to such Holders at their addresses as they shall appear on the Security register, and in each case such notice shall set forth in general terms the substance of such supplemental indenture. Any failure of the Trustee to mail such notice, or any defect therein, shall not, however, in any way impair or affect the validity of any such supplemental indenture.

Section 8.03 *Effect of Supplemental Indenture*. Upon the execution of any supplemental indenture pursuant to the provisions hereof, this Indenture shall be and be deemed to be modified and amended in accordance therewith and the respective rights, limitations of rights, obligations, duties and immunities under this Indenture of the Trustee, the Issuer and the Holders of Securities of each series affected thereby shall thereafter be determined, exercised and enforced hereunder subject in all respects to such modifications and amendments, and all the terms and conditions of any such supplemental indenture shall be and be deemed to be part of the terms and conditions of this Indenture for any and all purposes.

Section 8.04 *Documents to Be Given to Trustee*. The Trustee, subject to the provisions of Sections 6.01 and 6.02, may receive an Officer's Certificate and an Opinion of Counsel as conclusive evidence that any supplemental indenture executed pursuant to this Article 8 complies with the applicable provisions of this Indenture.

Section 8.05 *Notation on Securities in Respect of Supplemental Indentures*. Securities of any series authenticated and delivered after the execution of any supplemental indenture pursuant to the provisions of this Article may bear a notation in form approved by the Trustee for such series as to any matter provided for by such supplemental indenture or as to any action taken by Securityholders. If the Issuer or the Trustee shall so determine, new Securities of any series so modified as to conform, in the opinion of the Trustee and the Board of Directors, to any modification of this Indenture contained in any such supplemental indenture may be prepared by the Issuer, authenticated by the Trustee and delivered in exchange for the Securities of such series then Outstanding.

ARTICLE 9
CONSOLIDATION, MERGER, SALE OR CONVEYANCE

Section 9.01 *Issuer May Consolidate, Etc., on Certain Terms.* The Issuer shall not consolidate with or merge into any other Person (in a transaction in which the Issuer is not the surviving corporation) or convey, transfer or lease its properties and assets substantially as an entirety to any Person, unless (a) the Person formed by such consolidation or into which the Issuer is merged or the Person which acquires by conveyance or transfer, or which leases, the properties and assets of the Issuer substantially as an entirety (i) shall be a corporation, limited liability company, partnership or trust, (ii) shall be organized and validly existing under the laws of the United States of America, any State thereof or the District of Columbia and (iii) shall expressly assume, by an indenture supplemental hereto, executed and delivered to the Trustee, in form satisfactory to the Trustee, the due and punctual payment of the principal of and interest on all the Securities and the performance or observance of every covenant of this Indenture on the part of the Issuer to be performed, by supplemental indenture satisfactory in form to the Trustee, executed and delivered to the Trustee, by the Person formed by such consolidation or into which the Issuer shall have been merged or by the Person which shall have acquired the Issuer's assets; (b) immediately after giving effect to such transaction no Event of Default, and no event which, after notice or lapse of time or both, would become an Event of Default, shall have happened and be continuing; and (c) the Issuer has delivered to the Trustee an Officer's Certificate and an Opinion of Counsel, each stating that such consolidation, merger, conveyance, transfer or lease and, if a supplemental indenture is required in connection with such transaction, such supplemental indenture comply with this Article and that all conditions precedent herein provided for relating to such transaction have been complied with.

The conditions of (a)(ii) above shall not apply in the case of a corporation or entity not organized under the laws of the United States of America, any State thereof or the District of Columbia which shall agree, in form satisfactory to the Trustee, (i) to subject itself to the jurisdiction of the United States district court for the Southern District of New York and (ii) to indemnify and hold harmless the holders of all Securities against (A) any tax, assessment or governmental charge imposed on such holders by a jurisdiction other than the United States or any political subdivision or taxing authority thereof or therein with respect to, and withheld on the making of, any payment of principal or interest on such Securities and which would not have been so imposed and withheld had such consolidation, merger, sale or conveyance not been made and (B) any tax, assessment or governmental charge imposed on or relating to, and any costs or expenses involved in, such consolidation, merger, sale or conveyance.

The restrictions in this Section 9.01 shall not apply to (i) the merger or consolidation of the Issuer with one of its affiliates, if the Board of Directors determines in good faith that the purpose of such transaction is principally to change the Issuer's State of incorporation or convert the Issuer's form of organization to another form, or (ii) the merger of the Issuer with or into a single direct or indirect wholly owned Subsidiary.

Nothing contained in this Article shall apply to, limit or impose any requirements upon the consolidation or merger of any Person into the Issuer where the Issuer is the survivor of such transaction, or the acquisition by the Issuer, by purchase or otherwise, of all or any part of the property of any other Person (whether or not affiliated with the Issuer).

Section 9.02 *Successor Issuer Substituted*. Upon any consolidation of the Issuer with, or merger of the Issuer into, any other Person or any conveyance, transfer or lease of the properties and assets of the Issuer substantially as an entirety in accordance with Section 9.01, the successor Person formed by such consolidation or into which the Issuer is merged or to which such conveyance, transfer or lease is made shall succeed to, and be substituted for, and may exercise every right and power of, the Issuer under this Indenture with the same effect as if such successor Person had been named as the Issuer herein, and thereafter, except in the case of a lease, the predecessor Person shall be relieved of all obligations and covenants under this Indenture and the Securities.

In case of any such consolidation, merger, sale, lease or conveyance, such changes in phraseology and form (but not in substance) may be made in the Securities thereafter to be issued as may be appropriate.

ARTICLE 10
SATISFACTION AND DISCHARGE OF INDENTURE; DEFEASANCE;
UNCLAIMED MONEYS

Section 10.01 *Satisfaction and Discharge of Indenture; Defeasance*. (a) If at any time

(i) the Issuer shall have paid or caused to be paid the principal of and interest on all the Securities of any series Outstanding hereunder (other than Securities of such series which have been destroyed, lost or stolen and which have been replaced or paid as provided in Section 2.09) as and when the same shall have become due and payable, or

(ii) the Issuer shall have delivered to the Trustee for cancellation all Securities of any series theretofore authenticated (other than any Securities of such series which shall have been destroyed, lost or stolen and which shall have been replaced or paid as provided in Section 2.09) or

(iii) in the case of any series of Securities the exact amount (including the currency of payment) of principal of and interest due on which on the dates referred to in clause (B) below can be determined at the time of making the deposit referred to in such clause,

(A) all the Securities of such series not theretofore delivered to the Trustee for cancellation shall have become due and payable, or are by their terms to become due and payable within one year or are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice of redemption, and

(B) the Issuer shall have irrevocably deposited or caused to be deposited with the Trustee as trust funds the entire amount in cash (other than moneys repaid by the Trustee or any paying agent to the Issuer in accordance with Section 10.04) or, in the case of any series of Securities the payments on which may only be made in Dollars, U.S. Government Obligations maturing as to principal and interest in such amounts and at

such times as will insure the availability of cash sufficient to pay on any subsequent interest payment date all interest due on such interest payment date on the Securities of such series and to pay at maturity or upon redemption all Securities of such series (in each case other than any Securities of such series which shall have been destroyed, lost or stolen and which shall have been replaced or paid as provided in Section 2.09) not theretofore delivered to the Trustee for cancellation, including principal and interest due or to become due to such date of maturity, as the case may be,

and if, in any such case (i), (ii) or (iii), the Issuer shall also pay or cause to be paid all other sums payable hereunder by the Issuer, including amounts due the Trustee pursuant to Section 6.06, with respect to Securities of such series, then this Indenture shall cease to be of further effect with respect to Securities of such series (except as to (1) rights of registration of transfer, conversion and exchange of Securities of such series and the Issuer's right of optional redemption, (2) substitution of mutilated, defaced, destroyed, lost or stolen Securities, (3) rights of Holders of Securities to receive, solely from the trust fund described in Section 10.01(a)(iii)(B), payments of principal thereof and interest thereon, upon the original stated due dates therefor (but not upon acceleration) and remaining rights of the Holders to receive, solely from the trust fund described in Section 10.01(a)(iii)(B), sinking fund payments, if any, (4) the rights (including the Trustee's rights under Section 10.05) and immunities of the Trustee hereunder and the Trustee's obligations under Sections 10.02 and 10.04 and (5) the obligations of the Issuer under Section 3.02), and the Trustee, on demand of the Issuer accompanied by an Officer's Certificate and an Opinion of Counsel which complies with Section 11.05 and at the cost and expense of the Issuer, shall execute proper instruments acknowledging such satisfaction of and discharging this Indenture with respect to such series. The Issuer agrees to reimburse the Trustee for any costs or expenses thereafter reasonably and properly incurred and to compensate the Trustee for any services thereafter reasonably and properly rendered by the Trustee in connection with this Indenture or the Securities of such series.

(b) The following subsection shall apply to the Securities of each series unless specifically otherwise provided in a Board Resolution, Officer's Certificate or indenture supplemental hereto provided pursuant to Section 2.03. In addition to the right to discharge of the Indenture pursuant to subsection (a) above, the Issuer, at its option and at any time, by written notice by an officer delivered to the Trustee, may elect to have all of its obligations discharged with all Outstanding Securities of a series ("**Legal Defeasance**"), such discharge to be effective on the date that the conditions set forth in clauses (i) through (iv) and (vi) of Section 10.01(d) are satisfied, and thereafter the Issuer shall be deemed to have paid and discharged the entire Debt on all the Securities of such a series, and satisfied all its other obligations under such Securities and this Indenture insofar as such Securities are concerned and this Indenture shall cease to be of further effect with respect to Securities of such series (except as to (1) rights of registration of transfer, conversion and exchange of Securities of such series, (2) substitution of apparently mutilated, defaced, destroyed, lost or stolen Securities, (3) rights of Holders of Securities to receive, solely from the trust fund described in Section 10.01(d)(i), payments of principal thereof and interest thereon, upon the original stated due dates therefor (but not upon acceleration) and remaining rights of the Holders to receive, solely from the trust fund described in Section 10.01(d)(i), sinking fund payments, if any, (4) the rights (including the Trustee's

rights under Section 10.05) and immunities of the Trustee hereunder and the Trustee's obligations with respect to the Securities of such series under Sections 10.02 and 10.04 and (5) the obligations of the Issuer under Section 3.02).

(c) The following subsection shall apply to the Securities of each series unless specifically otherwise provided in a Board Resolution, Officer's Certificate or indenture supplemental hereto provided pursuant to Section 2.03. In addition to the right to discharge of the Indenture pursuant to subsection (a) and to Legal Defeasance pursuant to subsection (b), above, the Issuer, at its option and at any time, by written notice executed by an officer delivered to the Trustee, may elect to have its obligations under any covenant contained in this Indenture or in the Board Resolution or supplemental indenture relating to such series pursuant to Section 2.03 discharged with respect to all Outstanding Securities of a series, this Indenture and any indentures supplemental to this Indenture with respect to such series ("**Covenant Defeasance**"), such discharge to be effective on the date the conditions set forth in clauses (i) through (iii) and (v) through (vi) of Section 10.01(d) are satisfied, and such Securities shall thereafter be deemed to be not "Outstanding" for the purposes of any direction, waiver, consent or declaration of Securityholders (and the consequences of any thereof) in connection with such covenants, but shall continue to be "Outstanding" for all other purposes under this Indenture. For this purpose, such Covenant Defeasance means that, with respect to the Outstanding Securities of a series, the Issuer may omit to comply with and shall have no liability in respect of any term, condition or limitation set forth in any such covenant, whether directly or indirectly, by reason of any reference elsewhere herein to any such covenant or by reason of reference in any such covenant to any other provision herein or in any other document and such omission to comply shall not constitute an Event of Default under Section 5.01(c) or otherwise, but except as specified in this Section 10.01(c), the remainder of the Issuer's obligations under the Securities of such series, this Indenture, and any indentures supplemental to this Indenture with respect to such series shall be unaffected thereby.

(d) The following shall be the conditions to the application of Legal Defeasance under subsection (b) or Covenant Defeasance under subsection (c) to the Securities of the applicable series:

(i) the Issuer irrevocably deposits or causes to be deposited in trust with the Trustee or, at the option of the Trustee, with a trustee satisfactory to the Trustee and the Company under the terms of an irrevocable trust agreement in form and substance satisfactory to the Trustee, cash or U.S. Government Obligations that will generate cash sufficient to pay principal of and interest on the Outstanding Securities of such series to maturity or redemption, as the case may be, and to pay all other amounts payable by it hereunder, provided that (A) the trustee of the irrevocable trust, if any, shall have been irrevocably instructed to pay such funds or the proceeds of such U.S. Government Obligations to the Trustee and (B) the Trustee shall have been irrevocably instructed to apply such funds or the proceeds of such U.S. Government Obligations to (x) the principal and interest on all Securities of such series on the date that such principal or interest is due and payable and (y) any mandatory sinking fund payments on the day on which such payments are due and payable in accordance with the terms of the Indenture and the Securities of such series, and the Issuer shall also pay or cause to be paid all other amounts payable hereunder with respect to such series;

(ii) the Issuer delivers to the Trustee an Officer's Certificate stating that all conditions precedent specified herein relating to Legal Defeasance or Covenant Defeasance, as the case may be, have been complied with, and an Opinion of Counsel to the same effect;

(iii) no Event of Default under subsection (a), (b), (d) or (e) of Section 5.01 shall have occurred and be continuing, and no event which with notice or lapse of time or both would become such an Event of Default shall have occurred and be continuing, on the date of such deposit;

(iv) in the event of an election for Legal Defeasance under subsection (b), the Issuer shall have delivered to the Trustee an Opinion of Counsel stating that (A) the Issuer has received from, or there has been published by, the Internal Revenue Service a ruling or (B) since the date of this instrument, there has been a change in the applicable Federal income tax law, in either case (A) or (B) to the effect that, and based thereon such opinion shall confirm that, the Holders of such Securities will not recognize gain or loss for Federal income tax purposes as a result of the deposit, defeasance and discharge to be effected with respect to such Securities and will be subject to Federal income tax on the same amounts, in the same manner and at the same times as would be the case if such deposit, defeasance and discharge were not to occur;

(v) in the event of an election for Covenant Defeasance under subsection (c), the Issuer shall have delivered to the Trustee an Opinion of Counsel to the effect that the Holders of such Securities will not recognize gain or loss for Federal income tax purposes as a result of the deposit and Covenant Defeasance to be effected with respect to such Securities and will be subject to Federal income tax on the same amount, in the same manner and at the same times as would be the case if such deposit and Covenant Defeasance were not to occur; and

(vi) notwithstanding any other provisions of this subsection (d), such defeasance shall be effected in compliance with any additional or substitute terms, conditions or limitations which may be imposed on the Issuer pursuant to Section 2.03.

After such irrevocable deposit made pursuant to this Section 10.01(d) and satisfaction of the other conditions set forth in this subsection (d), the Trustee upon request shall execute proper instruments acknowledging the discharge of the Issuer's obligations pursuant to this Section 10.01.

Section 10.02 *Application by Trustee of Funds Deposited for Payment of Securities.* Subject to Section 10.04, all moneys deposited with the Trustee (or other trustee) pursuant to Section 10.01 shall be held in trust and applied by it to the payment, either directly or through

any paying agent (including the Issuer acting as its own paying agent), to the Holders of the particular Securities of such series for the payment or redemption of which such moneys have been deposited with the Trustee, of all sums due and to become due thereon for principal and interest; but such money need not be segregated from other funds except to the extent required by law.

Section 10.03 *Repayment of Moneys Held by Paying Agent*. In connection with the satisfaction and discharge of this Indenture with respect to Securities of any series, all moneys then held by any paying agent under the provisions of this Indenture with respect to such series of Securities shall, upon demand of the Issuer, be repaid to it or paid to the Trustee and thereupon such paying agent shall be released from all further liability with respect to such moneys.

Section 10.04 *Return of Moneys Held by Trustee and Paying Agent Unclaimed for Two Years*. Any moneys deposited with or paid to the Trustee or any paying agent for the payment of the principal of, interest on or additional amounts in respect of any Security of any series and not applied but remaining unclaimed for two years after the date upon which such principal, interest or additional amount shall have become due and payable, shall be repaid to the Issuer by the Trustee for such series or such paying agent, and the Holder of the Securities of such series shall thereafter look only to the Issuer for any payment which such Holder may be entitled to collect, and all liability of the Trustee or any paying agent with respect to such moneys shall thereupon cease.

Section 10.05 *Indemnity for U.S. Government Obligations*. The Issuer shall pay and indemnify the Trustee against any tax, fee or other charge imposed on or assessed against the U.S. Government Obligations deposited pursuant to Section 10.01 or the principal or interest received in respect of such obligations.

ARTICLE 11 MISCELLANEOUS PROVISIONS

Section 11.01 *No Recourse*. No recourse under or upon any obligation, covenant or agreement of this Indenture, or of any Security, or for any claim based thereon or otherwise in respect thereof, shall be had against any incorporator, stockholder, officer or director, past, present or future as such, of the Issuer or of any predecessor or successor corporation, either directly or through the Issuer or any such predecessor or successor corporation, whether by virtue of any constitution, statute or rule of law, or by the enforcement of any assessment or penalty or otherwise; it being expressly understood that this Indenture and the obligations issued hereunder are solely corporate obligations, and that no such personal liability whatever shall attach to, or is or shall be incurred by, the incorporators, stockholders, officers or directors as such, of the Issuer or of any predecessor or successor corporation, or any of them, because of the creation of the indebtedness hereby authorized, or under or by reason of the obligations, covenants or agreements contained in this Indenture or in any of the Securities or implied therefrom; and that any and all such personal liability of every name and nature, either at common law or in equity or by constitution or statute, of, and any and all such rights and claims against, every such incorporator, stockholder, officer or director as such, because of the creation of the indebtedness hereby authorized, or under or by reason of the obligations, covenants or

agreements contained in this Indenture or in any of the Securities or implied therefrom, are hereby expressly waived and released as a condition of, and as a consideration for, the execution of this Indenture and the issuance of such Securities.

Section 11.02 *Provisions of Indenture for the Sole Benefit of Parties and Holders of Securities.* Nothing in this Indenture or in the Securities, expressed or implied, shall give or be construed to give to any person, firm or corporation, other than the parties hereto and their successors and the Holders of the Securities any legal or equitable right, remedy or claim under this Indenture or under any covenant or provision herein contained, all such covenants and provisions being for the sole benefit of the parties hereto and their successors and of the Holders of the Securities.

Section 11.03 *Successors and Assigns of Issuer Bound by Indenture.* All the covenants, stipulations, promises and agreements contained in this Indenture by or on behalf of the Issuer shall bind its successors and assigns, whether so expressed or not.

Section 11.04 *Notices and Demands on Issuer, Trustee and Holders of Securities.* Any notice or demand which by any provision of this Indenture is required or permitted to be given or served by the Trustee or by the Holders of Securities to or on the Issuer may be given or served by being deposited postage prepaid, first-class mail (except as otherwise specifically provided herein) addressed (until another address of the Issuer is filed by the Issuer with the Trustee) to Tetrphase Pharmaceuticals, Inc., 480 Arsenal Street, Suite 110, Watertown, Massachusetts 02472, Attn: Chief Financial Officer. Any notice, direction, request or demand by the Issuer or any Holder of Securities to or upon the Trustee shall be deemed to have been sufficiently given or made, for all purposes, if given or made at _____, _____, Attn: _____.

Where this Indenture provides for notice to Holders of Securities, such notice shall be sufficiently given (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid, to each Holder entitled thereto, at his or her last address as it appears in the Security register. In case, by reason of the suspension of or irregularities in regular mail service, it shall be impracticable to mail notice of any event to Holders of Securities when said notice is required to be given pursuant to any provision of this Indenture or of the Securities, then any manner of giving such notice as shall be satisfactory to the Trustee shall be deemed to be a sufficient giving of such notice.

In case, by reason of the suspension of or irregularities in regular mail service, it shall be impracticable to mail notice to the Issuer when such notice is required to be given pursuant to any provision of this Indenture, then any manner of giving such notice as shall be satisfactory to the Trustee shall be deemed to be a sufficient giving of such notice.

Neither the failure to give notice, nor any defect in any notice so given, to any particular Holder of a Security shall affect the sufficiency of such notice with respect to other Holders of Securities given as provided above.

Where this Indenture provides for notice in any manner, such notice may be waived in writing by the Person entitled to receive such notice either before or after the event, and such waiver shall be the equivalent of such notice. Waivers of notice by Holders shall be filed with the Trustee, but such filing shall not be a condition precedent to the validity of any action taken in reliance upon such waiver.

Section 11.05 *Officer's Certificates and Opinions of Counsel; Statements to Be Contained Therein*. Upon any application or demand by the Issuer to the Trustee to take any action under any of the provisions of this Indenture, the Issuer shall furnish to the Trustee an Officer's Certificate stating that all conditions precedent provided for in this Indenture relating to the proposed action have been complied with and an Opinion of Counsel stating that in the opinion of such counsel all such conditions precedent have been complied with, except that in the case of any such application or demand as to which the furnishing of such documents is specifically required by any provision of this Indenture relating to such particular application or demand, no additional certificate or opinion need be furnished.

Each certificate or opinion provided for in this Indenture and delivered to the Trustee with respect to compliance with a condition or covenant provided for in this Indenture shall include (a) a statement that the person making such certificate or opinion has read such covenant or condition, (b) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based, (c) a statement that, in the opinion of such person, he or she has made such examination or investigation as is necessary to enable him or her to express an informed opinion as to whether or not such covenant or condition has been complied with and (d) a statement as to whether or not, in the opinion of such person, such condition or covenant has been complied with.

Any certificate, statement or opinion of an officer of the Issuer may be based, insofar as it relates to legal matters, upon a certificate or opinion of or representations by counsel, unless such officer knows that the certificate or opinion or representations with respect to the matters upon which his or her certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous. Any certificate, statement or opinion of counsel may be based, insofar as it relates to factual matters, information with respect to which is in the possession of the Issuer, upon the certificate, statement or opinion of or representations by an officer or officers of the Issuer, unless such counsel knows that the certificate, statement or opinion or representations with respect to the matters upon which his or her certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous.

Any certificate, statement or opinion of an officer of the Issuer or of counsel may be based, insofar as it relates to accounting matters, upon a certificate or opinion of or representations by an accountant or firm of accountants in the employ of the Issuer, unless such officer or counsel, as the case may be, knows that the certificate or opinion or representations with respect to the accounting matters upon which his or her certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous.

Any certificate or opinion of any independent firm of public accountants filed with and directed to the Trustee shall contain a statement that such firm is independent.

Section 11.06 *Payments Due on Saturdays, Sundays and Holidays*. If the date of maturity of interest on or principal of the Securities of any series or the date fixed for redemption or repayment of any such Security, or the last day on which a Holder has the right to convert any Security, shall not be a Business Day, then payment of interest or principal, or any conversion, need not be made on such date, but may be made on the next succeeding Business Day with the same force and effect as if made on the date of maturity or the date fixed for redemption or on such last day for conversion, and no interest shall accrue for the period after such date.

Section 11.07 *Conflict of Any Provision of Indenture With Trust Indenture Act of 1939*. If and to the extent that any provision of this Indenture limits, qualifies or conflicts with another provision included in this Indenture by operation of Sections 310 to 317, inclusive, of the Trust Indenture Act of 1939, such incorporated provision shall control.

Section 11.08 *New York Law to Govern*. This Indenture and each Security shall be deemed to be a contract under the laws of the State of New York, and for all purposes shall be governed by and construed in accordance with the laws of such State without regard to any principle of conflict of laws that would require or permit the application of the laws of any other jurisdiction, except as may otherwise be required by mandatory provisions of law.

Section 11.09 *Counterparts*. This Indenture may be executed in any number of counterparts, each of which shall be an original; but such counterparts shall together constitute but one and the same instrument.

Section 11.10 *Effect of Headings*. The Article and Section headings herein and the Table of Contents are for convenience only and shall not affect the construction hereof.

Section 11.11 *Actions by Successor*. Any act or proceeding by any provision of this Indenture authorized or required to be done or performed by any board of directors or its equivalent, committee or officer of the Issuer shall and may be done and performed with like force and effect by the corresponding board, committee or officer of any corporation that shall at the time be the lawful successor of the Issuer.

Section 11.12 *Severability*. In case any one or more of the provisions contained in this Indenture or in the Securities of any series shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Indenture or of such Securities, but this Indenture and such Securities shall be construed as if such invalid or illegal or unenforceable provision had never been contained herein or therein.

ARTICLE 12 REDEMPTION OF SECURITIES AND SINKING FUNDS

Section 12.01 *Applicability of Article*. The provisions of this Article shall be applicable to the Securities of any series which are redeemable before their maturity or to any sinking fund for the retirement of Securities of a series, except as otherwise specified, as contemplated by Section 2.03 for Securities of such series.

Section 12.02 *Notice of Redemption; Partial Redemptions.* Notice of redemption to the Holders of Securities of any series to be redeemed as a whole or in part at the option of the Issuer shall be given by mailing notice of such redemption by first class mail, postage prepaid, at least 30 days and not more than 60 days prior to the date fixed for redemption to such Holders of Securities of such series at their last addresses as they shall appear upon the Security register. Any notice which is given in the manner herein provided shall be conclusively presumed to have been duly given, whether or not the Holder receives the notice. Failure to give notice or any defect in the notice to the Holder of any Security of a series designated for redemption as a whole or in part shall not affect the validity of the proceedings for the redemption of any other Security of such series.

The notice of redemption to each such Holder shall specify the principal amount of each Security of such series held by such Holder to be redeemed, the date fixed for redemption, the redemption price, the place or places of payment, that payment will be made upon presentation and surrender of such Securities, that such redemption is pursuant to the mandatory or optional sinking fund, or both, if such be the case, that interest accrued to the date fixed for redemption will be paid as specified in such notice and that on and after said date interest thereon or on the portions thereof to be redeemed will cease to accrue and shall also specify, if applicable, the conversion price then in effect and the date on which the right to convert such Securities or the portions thereof to be redeemed will expire. In case any Security of a series is to be redeemed in part only, the notice of redemption shall state the portion of the principal amount thereof to be redeemed and shall state that on and after the date fixed for redemption, upon surrender of such Security, a new Security or Securities of such series in principal amount equal to the unredeemed portion thereof will be issued.

The notice of redemption of Securities of any series to be redeemed at the option of the Issuer shall be given by the Issuer or, at the Issuer's request, by the Trustee in the name and at the expense of the Issuer.

On or before the redemption date specified in the notice of redemption given as provided in this Section, the Issuer will deposit with the Trustee or with one or more paying agents (or, if the Issuer is acting as its own paying agent, set aside, segregate and hold in trust as provided in Section 3.04) an amount of money sufficient to redeem on the redemption date all the Securities of such series so called for redemption (other than those Securities theretofore surrendered for conversion into Common Stock in accordance with their terms) at the appropriate redemption price, together with accrued interest to the date fixed for redemption. If any Security called for redemption is converted pursuant hereto and in accordance with the terms thereof, any money deposited with the Trustee or any paying agent or so segregated and held in trust for the redemption of such Security shall be paid to the Issuer upon the Issuer's request, or, if then held by the Issuer, shall be discharged from such trust. The Issuer will deliver to the Trustee at least 10 days prior to the date the notice required to be delivered to the Holders is to be sent (unless a shorter time period shall be acceptable to the Trustee) an Officer's Certificate (which need not comply with Section 11.05) stating the aggregate principal amount of Securities to be redeemed. In case of a redemption at the election of the Issuer prior to the expiration of any restriction on such redemption, the Issuer shall deliver to the Trustee, prior to the giving of any notice of redemption to Holders pursuant to this Section, an Officer's Certificate stating that such restriction has been complied with.

If less than all the Securities of a series are to be redeemed, the Trustee shall select, in such manner as it shall deem appropriate and fair, Securities of such series to be redeemed in whole or in part. Securities may be redeemed in part in multiples equal to the minimum authorized denomination for Securities of such series or any multiple thereof. The Trustee shall promptly notify the Issuer in writing of the Securities of such series selected for redemption and, in the case of any Securities of such series selected for partial redemption, the principal amount thereof to be redeemed. For all purposes of this Indenture, unless the context otherwise requires, all provisions relating to the redemption of Securities of any series shall relate, in the case of any Security redeemed or to be redeemed only in part, to the portion of the principal amount of such Security which has been or is to be redeemed. If any Security selected for partial redemption is surrendered for conversion after such selection, the converted portion of such Security shall be deemed (so far as may be possible) to be the portion selected for redemption.

Section 12.03 *Payment of Securities Called for Redemption*. If notice of redemption has been given as above provided, the Securities or portions of Securities specified in such notice shall become due and payable on the date and at the place stated in such notice at the applicable redemption price, together with interest accrued to the date fixed for redemption, and on and after said date (unless the Issuer shall default in the payment of such Securities at the redemption price, together with interest accrued to said date) interest on the Securities or portions of Securities so called for redemption shall cease to accrue, and such Securities shall cease from and after the date fixed for redemption to be convertible into Common Stock (to the extent otherwise convertible in accordance with their terms), if applicable, and cease to be entitled to any benefit or security under this Indenture, and except as provided in the paragraph below, the Holders thereof shall have no right in respect of such Securities except the right to receive the redemption price thereof and unpaid interest to the date fixed for redemption. On presentation and surrender of such Securities at a place of payment specified in said notice, said Securities or the specified portions thereof shall be paid and redeemed by the Issuer at the applicable redemption price, together with interest accrued thereon to the date fixed for redemption; *provided*, that payment of interest becoming due on or prior to the date fixed for redemption shall be payable to the Holders of such Securities registered as such on the relevant record date subject to the terms and provisions of Sections 2.03 and 2.07 hereof.

If any Security called for redemption shall not be so paid upon surrender thereof for redemption, the principal shall, until paid or duly provided for, bear interest from the date fixed for redemption at the rate of interest or Yield to Maturity (in the case of an Original Issue Discount Security) borne by such Security and, if applicable, such Security shall remain convertible into Common Stock until the principal of such Security shall have been paid or duly provided for.

Upon presentation of any Security redeemed in part only, the Issuer shall execute and the Trustee shall authenticate and deliver to or on the order of the Holder thereof, at the expense of the Issuer, a new Security or Securities of such series, of authorized denominations, in principal amount equal to the unredeemed portion of the Security so presented.

Section 12.04 *Exclusion of Certain Securities from Eligibility for Selection for Redemption*. Securities shall be excluded from eligibility for selection for redemption if they are identified by registration and certificate number in an Officer's Certificate delivered to the

Trustee at least 40 days prior to the last date on which notice of redemption may be given as being owned of record and beneficially by, and not pledged or hypothecated by either (a) the Issuer or (b) an entity specifically identified in such written statement as directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer.

Section 12.05 *Mandatory and Optional Sinking Funds*. The minimum amount of any sinking fund payment provided for by the terms of the Securities of any series is herein referred to as a “**mandatory sinking fund payment**”, and any payment in excess of such minimum amount provided for by the terms of the Securities of any series is herein referred to as an “**optional sinking fund payment**”. The date on which a sinking fund payment is to be made is herein referred to as the “**sinking fund payment date**”.

In lieu of making all or any part of any mandatory sinking fund payment with respect to any series of Securities in cash, the Issuer may at its option (a) deliver to the Trustee Securities of such series theretofore purchased or otherwise acquired (except upon redemption pursuant to the mandatory sinking fund) by the Issuer or receive credit for Securities of such series (not previously so credited) theretofore purchased or otherwise acquired (except as aforesaid) by the Issuer and delivered to the Trustee for cancellation pursuant to Section 2.10 and, if applicable, receive credit for Securities (not previously so credited) converted into Common Stock and so delivered to the Trustee for cancellation, (b) receive credit for optional sinking fund payments (not previously so credited) made pursuant to this Section, or (c) receive credit for Securities of such series (not previously so credited) redeemed by the Issuer through any optional redemption provision contained in the terms of such series. Securities so delivered or credited shall be received or credited by the Trustee at the sinking fund redemption price specified in such Securities.

On or before the 60th day next preceding each sinking fund payment date for any series, the Issuer will deliver to the Trustee an Officer’s Certificate (which need not contain the statements required by Section 11.05) (a) specifying the portion of the mandatory sinking fund payment to be satisfied by payment of cash and the portion to be satisfied by credit of Securities of such series and the basis for such credit, (b) stating that none of the Securities of such series for which credit will be taken has theretofore been so credited, (c) stating that no defaults in the payment of interest or Events of Default with respect to such series have occurred (which have not been waived or cured) and are continuing and (d) stating whether or not the Issuer intends to exercise its right to make an optional sinking fund payment with respect to such series and, if so, specifying the amount of such optional sinking fund payment which the Issuer intends to pay on or before the next succeeding sinking fund payment date. Any Securities of such series to be credited and required to be delivered to the Trustee in order for the Issuer to be entitled to credit therefor as aforesaid which have not theretofore been delivered to the Trustee shall be delivered for cancellation pursuant to Section 2.10 to the Trustee with such Officer’s Certificate (or reasonably promptly thereafter if acceptable to the Trustee). Such Officer’s Certificate shall be irrevocable and upon its receipt by the Trustee the Issuer shall become unconditionally obligated to make all the cash payments or payments therein referred to, if any, on or before the next succeeding sinking fund payment date. Failure of the Issuer, on or before any such 60th day, to deliver such Officer’s Certificate and Securities specified in this paragraph, if any, shall not constitute a default but shall constitute, on and as of such date, the irrevocable election of the Issuer that the mandatory sinking fund payment for such series due on the next succeeding sinking fund payment date shall be paid entirely in cash without the option to deliver or credit Securities of such series in respect thereof.

If the sinking fund payment or payments (mandatory or optional or both) to be made in cash on the next succeeding sinking fund payment date plus any unused balance of any preceding sinking fund payments made in cash shall exceed \$50,000 (or the equivalent thereof in any Foreign Currency or a lesser sum in Dollars or in any Foreign Currency if the Issuer shall so request) with respect to the Securities of any particular series, such cash shall be applied on the next succeeding sinking fund payment date to the redemption of Securities of such series at the sinking fund redemption price together with accrued interest to the date fixed for redemption. If such amount shall be \$50,000 (or the equivalent thereof in any Foreign Currency) or less and the Issuer makes no such request then it shall be carried over until a sum in excess of \$50,000 (or the equivalent thereof in any Foreign Currency) is available, which delay in accordance with this paragraph shall not be a default or breach of the obligation to make such payment. The Trustee shall select, in the manner provided in Section 12.02, for redemption on such sinking fund payment date a sufficient principal amount of Securities of such series to which such cash may be applied, as nearly as may be, and shall (if requested in writing by the Issuer) inform the Issuer of the serial numbers of the Securities of such series (or portions thereof) so selected. The Trustee, in the name and at the expense of the Issuer (or the Issuer, if it shall so request the Trustee in writing), shall cause notice of redemption of the Securities of such series to be given in substantially the manner provided in Section 12.02 (and with the effect provided in Section 12.03) for the redemption of Securities of such series in part at the option of the Issuer. The amount of any sinking fund payments not so applied or allocated to the redemption of Securities of such series shall be added to the next cash sinking fund payment for such series and, together with such payment, shall be applied in accordance with the provisions of this Section. Any and all sinking fund moneys held on the stated maturity date of the Securities of any particular series (or earlier, if such maturity is accelerated), which are not held for the payment or redemption of particular Securities of such series, shall be applied, together with other moneys, if necessary, sufficient for the purpose, to the payment of the principal of, and interest on, the Securities of such series at maturity. The Issuer's obligation to make a mandatory or optional sinking fund payment shall automatically be reduced by an amount equal to the sinking fund redemption price allocable to any Securities or portions thereof called for redemption pursuant to the preceding paragraph on any sinking fund payment date and converted into Common Stock in accordance with the terms of such Securities; *provided that*, if the Trustee is not the conversion agent for the Securities, the Issuer or such conversion agent shall give the Trustee written notice on or prior to the date fixed for redemption of the principal amount of Securities or portions thereof so converted.

On or before each sinking fund payment date, the Issuer shall pay to the Trustee in cash or shall otherwise provide for the payment of all interest accrued to the date fixed for redemption on Securities to be redeemed on such sinking fund payment date.

The Trustee shall not redeem or cause to be redeemed any Securities of a series with sinking fund moneys or give any notice of redemption of Securities for such series by operation of the sinking fund during the continuance of a default in payment of interest on such Securities or of any Event of Default except that, where the mailing of notice of redemption of any Securities shall theretofore have been made, the Trustee shall redeem or cause to be redeemed

such Securities, provided that it shall have received from the Issuer a sum sufficient for such redemption. Except as aforesaid, any moneys in the sinking fund for such series at the time when any such default or Event of Default shall occur, and any moneys thereafter paid into the sinking fund, shall, during the continuance of such default or Event of Default, be deemed to have been collected under Article 5 and held for the payment of all such Securities. In case such Event of Default shall have been waived as provided in Section 5.10, or the default cured on or before the 60th day preceding the sinking fund payment date in any year, such moneys shall thereafter be applied on such sinking fund payment date in accordance with this Section to the redemption of such Securities.

ARTICLE 13
SUBORDINATION OF SECURITIES

Section 13.01 *Agreement of Subordination*. The Issuer covenants and agrees, and each holder of Securities issued hereunder by its acceptance thereof likewise covenants and agrees, that all Securities shall be issued subject to the provisions of this Article 13; and each Securityholder, whether upon original issue or upon transfer or assignment thereof, accepts and agrees to be bound by such provisions.

The payment of the principal of and interest on all Securities issued hereunder shall, to the extent and in the manner hereinafter set forth, be subordinated and subject in right of payment to the prior payment in full of all Senior Indebtedness of the Issuer, whether outstanding at the date of this Indenture or thereafter incurred.

The provisions of this Article 13 define the subordination of the Securities, as obligations of the Issuer, with respect to Senior Indebtedness of the Issuer.

No provision of this Article 13 shall prevent the occurrence of any default or Event of Default hereunder.

Section 13.02 *Payments to Securityholders*. In the event and during the continuation of any default in the payment of principal, premium, interest or any other payment due on any Senior Indebtedness of the Issuer continuing beyond the period of grace, if any, specified in the instrument or lease evidencing such Senior Indebtedness of the Issuer, then, unless and until such default shall have been cured or waived or shall have ceased to exist, no payment shall be made by the Issuer with respect to the principal of or interest on the Securities, except sinking fund obligations satisfied by credit of acquired Securities under Section 12.05 prior to the happening of such default and payments made pursuant to Article 10 hereof from monies deposited with the Trustee pursuant thereto prior to the happening of such default.

Upon any payment by the Issuer, or distribution of assets of the Issuer of any kind or character, whether in cash, property or securities, to creditors upon any dissolution or winding-up or liquidation or reorganization of the Issuer, whether voluntary or involuntary or in bankruptcy, insolvency, receivership or other proceedings, all amounts due or to become due upon all Senior Indebtedness of the Issuer shall first be paid in full, or payment thereof provided for in money in accordance with its terms, before any payment is made on account of the principal or interest on the Securities (except payments made pursuant to Article 10 hereof from monies deposited with

the Trustee pursuant thereto prior to the happening of such dissolution, winding-up, liquidation or reorganization); and upon any such dissolution or winding-up or liquidation or reorganization any payment by the Issuer, or distribution of assets of the Issuer of any kind or character, whether in cash, property or securities, to which the holders of the Securities or the Trustee would be entitled, except for the provisions of this Article 13, shall (except as aforesaid) be paid by the Issuer or by any receiver, trustee in bankruptcy, liquidating trustee, agent or other Person making such payment or distribution, or by the holders of the Securities or by the Trustee under this Indenture if received by them or it, directly to the holders of Senior Indebtedness of the Issuer (pro rata to such holders on the basis of the respective amounts of Senior Indebtedness of the Issuer held by such holders, as calculated by the Issuer) or their representative or representatives, or to the trustee or trustees under any indenture pursuant to which any instruments evidencing any Senior Indebtedness of the Issuer may have been issued, as their respective interests may appear, to the extent necessary to pay all Senior Indebtedness of the Issuer in full, in money or money's worth, after giving effect to any concurrent payment or distribution to or for the holders of Senior Indebtedness of the Issuer, before any payment or distribution is made to the holders of the Securities or to the Trustee.

In the event that, notwithstanding the foregoing, any payment or distribution of assets of the Issuer of any kind or character, whether in cash, property or securities, prohibited by the foregoing, shall be received by the Trustee or the holders of the Securities before all Senior Indebtedness of the Issuer is paid in full, or provision is made for such payment in money in accordance with its terms, such payment or distribution shall be held in trust for the benefit of and shall be paid over or delivered to the holders of Senior Indebtedness of the Issuer or their representative or representatives, or to the trustee or trustees under any indenture pursuant to which any instruments evidencing any Senior Indebtedness of the Issuer may have been issued, as their respective interests may appear, as calculated by the Issuer, for application to the payment of all Senior Indebtedness of the Issuer remaining unpaid to the extent necessary to pay all Senior Indebtedness of the Issuer in full in money in accordance with its terms, after giving effect to any concurrent payment or distribution to or for the holders of such Senior Indebtedness.

For purposes of this Article 13, the words, "cash, property or securities" shall not be deemed to include shares of stock of the Issuer as reorganized or readjusted, or securities of the Issuer or any other corporation provided for by a plan of reorganization or readjustment, the payment of which is subordinated at least to the extent provided in this Article 13 with respect to the Securities to the payment of all Senior Indebtedness of the Issuer which may at the time be outstanding; provided that (i) the Senior Indebtedness of the Issuer is assumed by the new corporation, if any, resulting from any such reorganization or readjustment, and (ii) the rights of the holders of the Senior Indebtedness of the Issuer (other than leases) and of leases which are assumed are not, without the consent of such holders, altered by such reorganization or readjustment.

The consolidation of the Issuer with, or the merger of the Issuer into, another corporation or the liquidation or dissolution of the Issuer following the conveyance or transfer of its property as an entirety, or substantially as an entirety, to another corporation upon the terms and conditions provided for in Article 9 hereof shall not be deemed a dissolution, winding-up, liquidation or reorganization for the purposes of this Section 13.02 if such other corporation

shall, as a part of such consolidation, merger, conveyance or transfer, comply with the conditions stated in Article 9 hereof. Nothing in this Section 13.02 shall apply to claims of, or payments to, the Trustee under or pursuant to Section 6.06.

Section 13.03 *Subrogation of Securities*. Subject to the payment in full of all Senior Indebtedness of the Issuer, the rights of the holders of the Securities shall be subrogated to the rights of the holders of Senior Indebtedness of the Issuer to receive payments or distributions of cash, property or securities of the Issuer applicable to the Senior Indebtedness of the Issuer until the principal of and interest on the Securities shall be paid in full; and, for the purposes of such subrogation, no payments or distributions to or for the benefit of the holders of the Senior Indebtedness of the Issuer or the Trustee of any cash, property or securities to which the holders of the Securities or the Trustee would be entitled except for the provisions of this Article 13, shall, as between the Issuer, its creditors other than holders of Senior Indebtedness of the Issuer, and the holders of the Securities, be deemed to be a payment by the Issuer to or on account of the Senior Indebtedness of the Issuer. It is understood that the provisions of this Article 13 are and are intended solely for the purpose of defining the relative rights of the holders of the Securities, on the one hand, and the holders of the Senior Indebtedness of the Issuer, on the other hand.

Nothing contained in this Article 13 or elsewhere in this Indenture or in the Securities is intended to or shall impair, as between the Issuer, its creditors other than the holders of its Senior Indebtedness, and the holders of the Securities, the obligation of the Issuer, which is absolute and unconditional, to pay to the holders of the Securities the principal of and interest on the Securities as and when the same shall become due and payable in accordance with their terms, or is intended to or shall affect the relative rights of the holders of the Securities and creditors of the Issuer other than the holders of its Senior Indebtedness, nor shall anything herein or therein prevent the Trustee or the holder of any Security from exercising all remedies otherwise permitted by applicable law upon default under this Indenture, subject to the rights, if any, under this Article 13 of the holders of Senior Indebtedness of the Issuer in respect of cash, property or securities of the Issuer received upon the exercise of any such remedy.

Upon any payment or distribution of assets of the Issuer referred to in this Article 13, the Trustee, subject to the provisions of Section 6.01, and the holders of the Securities shall be entitled to rely upon any order or decree made by any court of competent jurisdiction in which such dissolution, winding-up, liquidation or reorganization proceedings are pending, or a certificate of the receiver, trustee in bankruptcy, liquidating trustee, agent or other Person making such payment or distribution, delivered to the Trustee or to the holders of the Securities, for the purpose of ascertaining the Persons entitled to participate in such distribution, the holders of the Senior Indebtedness and other indebtedness of the Issuer, the amount thereof or payable thereon, the amount or amounts paid or distributed thereon and all other facts pertinent thereto or to this Article 13.

Section 13.04 *Authorization by Securityholders*. Each holder of a Security by its acceptance thereof authorizes and directs the Trustee on its behalf to take such action as may be necessary or appropriate to effectuate the subordination provided in this Article 13 appoints the Trustee its attorney-in-fact for any and all such purposes.

Section 13.05 *Notice to Trustee*. The Issuer shall give promptly written notice to a Responsible Officer of the Trustee of any fact known to the Issuer which would prohibit the making of any payment of monies to or by the Trustee in respect of the Securities pursuant to the provisions of this Article 13. Notwithstanding the provisions of this Article 13 or any other provision of this Indenture, the Trustee shall not be charged with knowledge of the existence of any facts which would prohibit the making of any payment of monies to or by the Trustee in respect of the Securities pursuant to the provisions of this Article 13, unless and until a Responsible Officer of the Trustee shall have received written notice thereof at the Corporate Trust Office of the Trustee from the Issuer or a holder or holders of Senior Indebtedness of the Issuer or from any trustee therefor; and before the receipt of any such written notice, the Trustee, subject to the provisions of Section 6.01, shall be entitled in all respects to assume that no such facts exist; *provided* that if on a date not fewer than three Business Days prior to the date upon which by the terms hereof any such monies may become payable for any purpose (including, without limitation, the payment of the principal of or interest on any Security) the Trustee shall not have received, with respect to such monies, the notice provided for in this Section 13.05, then, anything herein contained to the contrary notwithstanding, the Trustee shall have full power and authority to receive such monies and to apply the same to the purpose for which they were received, and shall not be affected by any notice to the contrary which may be received by it on or after such prior date.

The Trustee conclusively shall be entitled to rely on the delivery to it of a written notice by a Person representing himself to be a holder of Senior Indebtedness of the Issuer (or a trustee on behalf of such holder) to establish that such notice has been given by a holder of Senior Indebtedness of the Issuer or a trustee on behalf of any such holder or holders. In the event that the Trustee determines in good faith that further evidence is required with respect to the right of any Person as a holder of Senior Indebtedness of the Issuer to participate in any payment or distribution pursuant to this Article 13, the Trustee may request such Person to furnish evidence to the reasonable satisfaction of the Trustee as to the amount of Senior Indebtedness of the Issuer held by such Person, the extent to which such Person is entitled to participate in such payment or distribution and any other facts pertinent to the rights of such Person under this Article 13, and if such evidence is not furnished the Trustee may defer any payment to such Person pending judicial determination as to the right of such Person to receive such payment.

Section 13.06 *Trustee's Relation to Senior Indebtedness*. The Trustee in its individual capacity shall be entitled to all the rights set forth in this Article 13 in respect of any Senior Indebtedness of the Issuer at any time held by it, to the same extent as any other holder of Senior Indebtedness of the Issuer and nothing elsewhere in this Indenture shall deprive the Trustee of any of its rights as such holder.

With respect to the holders of Senior Indebtedness of the Issuer, the Trustee undertakes to perform or to observe only such of its covenants and obligations as are specifically set forth in this Article 13, and no implied covenants or obligations with respect to the holders of Senior Indebtedness of the Issuer shall be read into this Indenture against the Trustee. The Trustee shall not be deemed to owe any fiduciary duty to the holders of Senior Indebtedness of the Issuer and the Trustee shall not be liable to any holder of Senior Indebtedness of the Issuer if it shall pay over or deliver to holders of Securities, the Issuer or any other Person money or assets to which any holder of Senior Indebtedness of the Issuer shall be entitled by virtue of this Article 13 or otherwise.

Section 13.07 *No Impairment of Subordination*. No right of any present or future holder of any Senior Indebtedness of the Issuer to enforce subordination as herein provided shall at any time in any way be prejudiced or impaired by any act or failure to act on the part of the Issuer or by any act or failure to act, in good faith, by any such holder, or by any noncompliance by the Issuer with the terms, provisions and covenants of this Indenture, regardless of any knowledge thereof which any such holder may have or otherwise be charged with.

Section 13.08 *Rights of Trustee*. Nothing in this Article 13 shall apply to claims of or payments to, the Trustee pursuant to Section 6.06.

[Signature pages follow]

IN WITNESS WHEREOF, the parties hereto have caused this Indenture to be duly executed as of _____ .

TETRAPHASE PHARMACEUTICALS, INC.

By: _____
Name:
Title:

Attest:

By: _____
Name:
Title:

, Trustee

By: _____
Name:
Title:

Form of Senior Note(FACE OF SECURITY)

[Each Global Security shall bear substantially the following legend:

UNLESS AND UNTIL IT IS EXCHANGED IN WHOLE OR IN PART FOR SECURITIES IN DEFINITIVE REGISTERED FORM, THIS SECURITY MAY NOT BE TRANSFERRED EXCEPT AS A WHOLE BY THE DEPOSITARY TO A NOMINEE OF THE DEPOSITARY OR BY A NOMINEE OF THE DEPOSITARY TO THE DEPOSITARY OR ANOTHER NOMINEE OF THE DEPOSITARY OR BY THE DEPOSITARY OR ANY SUCH NOMINEE TO A SUCCESSOR DEPOSITARY OR A NOMINEE OF SUCH SUCCESSOR DEPOSITARY. UNLESS THIS SECURITY IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITARY TRUST COMPANY, A NEW YORK CORPORATION (“DTC”), TO THE ISSUER OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY SECURITY ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR IN SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC (AND ANY PAYMENT IS MADE TO CEDE & CO. OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL INASMUCH AS THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.]

[If the Security has original issue discount for U.S. federal income tax purposes, insert tax legend:

[FOR PURPOSES OF SECTIONS 1272 , 1273, and 1275 OF THE INTERNAL REVENUE CODE OF 1986, AS AMENDED (“THE CODE”), THIS SECURITY IS BEING ISSUED WITH ORIGINAL ISSUE DISCOUNT. THE AMOUNT OF ORIGINAL ISSUE DISCOUNT (AS DEFINED IN SECTION 1273(A)(1) OF THE CODE AND TREASURY REGULATION SECTION 1.1273-1(A)) WITH RESPECT TO THIS SECURITY IS _____, THE ISSUE DATE (AS DEFINED IN SECTION 1275(A)(2) OF THE CODE AND TREASURY REGULATION SECTION 1.1273-2(A)(2)) OF THIS SECURITY IS _____, THE ISSUE PRICE (AS DEFINED IN SECTION 1273(B) OF THE CODE AND TREASURY REGULATION SECTION 1.1273-2(A)) OF THIS SECURITY IS _____, AND THE YIELD TO MATURITY (AS DEFINED IN TREASURY REGULATION SECTION 1.1272-1(B)) OF THIS SECURITY IS _____.]

TETRAPHASE PHARMACEUTICALS, INC.
[Title of Security]

No. []

CUSIP No.: []
[Common Code][ISIN]: []
[\$]

Tetraphase Pharmaceuticals, Inc., a Delaware corporation (“Issuer”, which term includes any successor corporation), for value received promises to pay to *[If the Security is a Global Security — CEDE & CO.]**[If the Security is not a Global Security —]* or registered assigns, the principal sum of _____ on _____, (the “Maturity Date”) *[If the Security is to bear interest prior to maturity, insert—*, and to pay interest thereon from _____ or from the most recent interest payment date to which interest has been paid or duly provided for, *[semiannually in arrears on _____ and _____ in each year]*, commencing _____, (each, an “Interest Payment Date”) at the rate of [% per annum], until the principal hereof is paid or made available for payment *[If applicable insert—*, and (to the extent that the payment of such interest shall be legally enforceable) at the rate of % per annum on any overdue principal and on any overdue installment of interest]. The interest so payable, and punctually paid or duly provided for, on any Interest Payment Date will, as provided in the Indenture (as defined below), be paid to the Holder in whose name this Security (or one or more predecessor Securities) is registered at the close of business on the record date for such interest, which shall be the _____ or _____ (whether or not a Business Day), as the case may be, next preceding such Interest Payment Date (each, an “Interest Record Date”). Interest will be computed on the basis of *[a 360-day year of twelve 30-day months.]*

*[If the Security is not to bear interest prior to maturity, insert—*The principal of this Security shall not bear interest except in the case of a default in payment of principal upon acceleration, upon redemption or at maturity and, in each such case, the overdue principal of this Security shall bear interest at the rate of % per annum (to the extent that the payment of such interest shall be legally enforceable), which shall accrue from the date of such default in payment to the date payment of such principal has been made or duly provided for. Interest on any overdue principal shall be payable on demand.]

Reference is made to the further provisions set forth on the reverse of this Security contained herein, which will for all purposes have the same effect as if set forth at this place.

IN WITNESS WHEREOF, the Issuer has caused this Security to be signed manually or by facsimile by its duly authorized officer under its corporate seal.

TETRAPHASE PHARMACEUTICALS, INC.

By: _____
Name: _____
Title: _____

Attest:

By: _____
Name: _____
Title: _____

This is one of the Securities of the series designated herein and referred to in the within-mentioned Indenture.

Dated: []

, as Trustee

By: _____
Title: _____

(REVERSE OF SECURITY)

TETRAPHASE PHARMACEUTICALS, INC.

[Title of Security]

1. Indenture

This Security is one of a duly authorized issue of debentures, notes or other evidence of indebtedness (hereinafter called the "Securities") of the Issuer of the series hereinafter specified, which series is initially limited in aggregate principal amount to [\$] , all of such Securities issued and to be issued under an Indenture dated as of , (the "Indenture") between the Issuer and as trustee (the "Trustee"). Capitalized terms herein are used as defined in the Indenture unless otherwise indicated. The terms of the Securities include those stated in the Indenture and those made part of the Indenture by reference to the Trust Indenture Act of 1939, as in effect on the date of the Indenture. The Securities are subject to all such terms, and Holders are referred to the Indenture and the Trust Indenture Act for a statement of all such terms. To the extent permitted by applicable law, in the event of any inconsistency between the terms of this Security and the terms of the Indenture, the terms of the Indenture shall control.

This Security is one of a series of Securities designated pursuant to the Indenture [and an [*Supplemental Indenture*] dated , , issued pursuant to Section 2.01 and Section 2.03 thereof (the "Supplement")] as . The Securities are general unsecured obligations of the Issuer. The Issuer may, subject to the provisions of the Indenture and applicable law, issue additional Securities of any series under the Indenture.

2. Method of Payment.

The Issuer shall pay interest on the Securities (except defaulted interest) to the persons who are the registered Holders at the close of business on the Interest Record Date immediately preceding the Interest Payment Date notwithstanding any transfer or exchange of such Security subsequent to such Interest Record Date and prior to such Interest Payment Date. Holders must surrender Securities to the Trustee to collect principal payments. The Issuer shall pay Principal and interest in money of [*the United States*] that at the time of payment is legal tender for payment of public and private debts. [However, the payments of interest, and any portion of the Principal (other than interest payable at maturity or on any redemption or repayment date or the final payment of Principal) shall be made by the Paying Agent, upon receipt from the Issuer of immediately available funds by [a./p.m.], New York City time (or such other time as may be agreed to between the Issuer and the Paying Agent or the Issuer), directly to a Holder (by Federal funds wire transfer or otherwise) if the Holder has delivered written instructions to the Trustee 15 days prior to such payment date requesting that such payment will be so made and designating the bank account to which such payments shall be so made and in the case of payments of Principal surrenders the same to the Trustee in exchange for a Security or Securities aggregating the same principal amount as the unredeemed principal amount of the Securities surrendered.]

3. Redemption.

[The Securities of this series may be redeemed at any time [on or after _____, _____], as a whole or in part, at the option of the Issuer, upon mailing notice of such redemption not less than 30 and not more than 60 days to the Holders of such Securities, at a redemption price equal to _____.]

4. Paying Agent and Security Registrar

Initially, the Trustee will act as Paying Agent and Security Registrar. The Issuer may change any Paying Agent or Security Registrar without notice to the Holders.

5. Denominations; Transfer; Exchange.

The Securities are in registered form, without coupons, in denominations of [\$1,000] and multiples of [\$1,000]. A Holder shall register the transfer of or exchange Securities in accordance with the Indenture. The Issuer may require a Holder, among other things, to furnish appropriate endorsements and transfer documents and to pay certain transfer taxes or similar governmental charges payable in connection therewith as permitted by the Indenture. *[The Issuer need not register the transfer of or exchange (a) any Securities for a period of fifteen (15) days preceding the first mailing of notice that such Securities are to be redeemed, or (b) any Securities selected, called or being called for redemption in whole or in part, except, in the case of any Security to be redeemed in part, the portion thereof not to be so redeemed.]*

6. Persons Deemed Owners.

The registered Holder of a Security shall be treated as the owner of it for all purposes.

7. Unclaimed Funds.

If funds for the payment of principal or interest remain unclaimed for two years, the Trustee and the Paying Agent will repay the funds to the Issuer. After that, all liability of the Trustee and such Paying Agent with respect to such funds shall cease.

8. Defeasance.

The Indenture *[as amended by the Supplement]* contains provisions for defeasance at any time of (a) the entire indebtedness of the Issuer on this Security and (b) certain restrictive covenants and the related Events of Default, upon compliance by the Issuer with certain conditions set forth therein, which provisions *[apply]* to this Security.

9. Amendment; Supplement; Waiver.

Subject to certain exceptions, the Securities of this series, *[the Supplement]* and the provisions of the Indenture relating to the Securities of this series may be amended or supplemented with the written consent of the Holders of at least a majority in aggregate principal amount of the Securities of this series then outstanding, and any existing Default or Event of Default, other than the non-payment of the principal amount of or interest on the Securities of

this series, or compliance with certain provisions may be waived with the consent of the Holders of a majority in aggregate principal amount of all the Securities of this series then outstanding. Without notice to or consent of any Holder, the parties thereto may amend or supplement the Indenture and the Securities to, among other things, cure any ambiguity, defect or inconsistency, provide for uncertificated Securities in addition to or in place of certificated Securities, or make any other change that does not adversely affect the rights of any Holder of a Security.

10. Defaults and Remedies.

If an Event of Default (other than certain bankruptcy Events of Default with respect to the Issuer) occurs and is continuing, the Trustee or the Holders of at least 25% in aggregate principal amount of Securities of this series then outstanding (voting as a separate class) by notice in writing to the Issuer (and also to the Trustee if such notice is given by the Holders) may declare [*the entire principal*] of the Securities of this series and the interest accrued thereon, if any, to be due and payable immediately in the manner and with the effect provided in the Indenture. If a bankruptcy Event of Default with respect to the Issuer occurs and is continuing, then [*the entire principal*] of the Securities then outstanding and interest accrued thereon, if any, shall become due and payable immediately in the manner and with the effect provided in the Indenture. Holders of Securities may not enforce the Indenture or the Securities except as provided in the Indenture. The Trustee is not obligated to enforce the Indenture or the Securities unless it has received indemnity satisfactory to it. The Indenture permits, subject to certain limitations therein provided, Holders of a majority in aggregate principal amount of the Securities then outstanding to direct the Trustee in its exercise of any trust or power. The Trustee may withhold from Holders of Securities notice of certain continuing Defaults or Events of Default if it determines that withholding notice is in their interest.

11. Trustee Dealings with Issuer.

The Trustee under the Indenture, in its individual or any other capacity, may become the owner or pledgee of Securities and may otherwise deal with the Issuer as if it were not the Trustee.

12. No Recourse Against Others.

No stockholder, director, officer, employee or incorporator, past, present or future as such, of the Issuer or any predecessor or successor corporation thereof shall have any liability for any obligation under the Securities or the Indenture or for any claim based on, in respect of or by reason of, such obligations or their creation. Each Holder of a Security by accepting a Security waives and releases all such liability. The waiver and release are part of the consideration for the issuance of the Securities.

13. Authentication.

This Security shall not be valid until the Trustee manually signs the certificate of authentication on this Security.

14. Abbreviations and Defined Terms.

Customary abbreviations may be used in the name of a Holder of a Security or an assignee, such as: TEN COM (= tenants in common), TEN ENT (= tenants by the entireties), JT TEN (= joint tenants with right of survivorship and not as tenants in common), CUST (= Custodian), and U/G/M/A (= Uniform Gifts to Minors Act).

15. CUSIP Numbers.

Pursuant to a recommendation promulgated by the Committee on Uniform Security Identification Procedures, the Issuer has caused CUSIP numbers to be printed on the Securities as a convenience to the Holders of the Securities. No representation is made as to the accuracy of such numbers as printed on the Securities and reliance may be placed only on the other identification numbers printed hereon.

16. Governing Law.

The laws of the State of New York shall govern the Indenture and this Security thereof, and for all purposes this Security shall be governed by and construed in accordance with the laws of such State without regard to any principle of conflict of laws that would require or permit the application of the laws of any other jurisdiction, except as may otherwise be required by mandatory provisions of law.

ASSIGNMENT FORM

I or we assign and transfer this Security to

(Print or type name, address and zip code of assignee or transferee)

(Insert Social Security or other identifying number of assignee or transferee)

and irrevocably appoint _____
agent to transfer this Security on the books of the Issuer. The agent may substitute another to act for him.

Dated: _____

Signed: _____
(Signed exactly as name appears on the other side of this Security)

Signature
Guarantee:

Participant in a recognized Signature Guarantee Medallion Program (or other signature guarantor program reasonably acceptable to the Trustee)

Form of Subordinated Note**(FACE OF SECURITY)**

[Each Global Security shall bear substantially the following legend:

UNLESS AND UNTIL IT IS EXCHANGED IN WHOLE OR IN PART FOR SECURITIES IN DEFINITIVE REGISTERED FORM, THIS SECURITY MAY NOT BE TRANSFERRED EXCEPT AS A WHOLE BY THE DEPOSITARY TO A NOMINEE OF THE DEPOSITARY OR BY A NOMINEE OF THE DEPOSITARY TO THE DEPOSITARY OR ANOTHER NOMINEE OF THE DEPOSITARY OR BY THE DEPOSITARY OR ANY SUCH NOMINEE TO A SUCCESSOR DEPOSITARY OR A NOMINEE OF SUCH SUCCESSOR DEPOSITARY. UNLESS THIS SECURITY IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITARY TRUST COMPANY, A NEW YORK CORPORATION (“DTC”), TO THE ISSUER OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY SECURITY ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR IN SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC (AND ANY PAYMENT IS MADE TO CEDE & CO. OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL INASMUCH AS THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.]

[If the Security has original issue discount for U.S. federal income tax purposes, insert tax legend:

[FOR PURPOSES OF SECTIONS 1272, 1273, and 1275 OF THE INTERNAL REVENUE CODE OF 1986, AS AMENDED (“THE CODE”), THIS SECURITY IS BEING ISSUED WITH ORIGINAL ISSUE DISCOUNT. THE AMOUNT OF ORIGINAL ISSUE DISCOUNT (AS DEFINED IN SECTION 1273(A)(1) OF THE CODE AND TREASURY REGULATION SECTION 1.1273-1(A)) WITH RESPECT TO THIS SECURITY IS _____, THE ISSUE DATE (AS DEFINED IN SECTION 1275(A)(2) OF THE CODE AND TREASURY REGULATION SECTION 1.1273-2(A)(2)) OF THIS SECURITY IS _____, THE ISSUE PRICE (AS DEFINED IN SECTION 1273(B) OF THE CODE AND TREASURY REGULATION SECTION 1.1273-2(A)) OF THIS SECURITY IS _____, AND THE YIELD TO MATURITY (AS DEFINED IN TREASURY REGULATION SECTION 1.1272-1(B)) OF THIS SECURITY IS _____.]

TETRAPHASE PHARMACEUTICALS, INC.
[Title of Security]

No. []

CUSIP No.: []
[Common Code][ISIN]: []
[\$]

TETRAPHASE PHARMACEUTICALS, INC., a Delaware corporation (“Issuer”, which term includes any successor corporation), for value received promises to pay to *[If the Security is a Global Security — CEDE & CO.]**[If the Security is not a Global Security —]* or registered assigns, the principal sum of on , (the “Maturity Date”) *[If the Security is to bear interest prior to maturity, insert—*, and to pay interest thereon from or from the most recent interest payment date to which interest has been paid or duly provided for, *[semiannually in arrears on and in each year]*, commencing , (each, an “Interest Payment Date”) at the rate of [% *per annum*], until the principal hereof is paid or made available for payment *[If applicable insert—*, and (to the extent that the payment of such interest shall be legally enforceable) at the rate of % per annum on any overdue principal and on any overdue installment of interest]. The interest so payable, and punctually paid or duly provided for, on any Interest Payment Date will, as provided in the Indenture (as defined below), be paid to the Holder in whose name this Security (or one or more predecessor Securities) is registered at the close of business on the record date for such interest, which shall be the or (whether or not a Business Day), as the case may be, next preceding such Interest Payment Date (each, an “Interest Record Date”). Interest will be computed on the basis of *[a 360-day year of twelve 30-day months]*.

*[If the Security is not to bear interest prior to maturity, insert—*The principal of this Security shall not bear interest except in the case of a default in payment of principal upon acceleration, upon redemption or at maturity and, in each such case, the overdue principal of this Security shall bear interest at the rate of % per annum (to the extent that the payment of such interest shall be legally enforceable), which shall accrue from the date of such default in payment to the date payment of such principal has been made or duly provided for. Interest on any overdue principal shall be payable on demand.]

Reference is made to the further provisions set forth on the reverse of this Security contained herein, which will for all purposes have the same effect as if set forth at this place.

IN WITNESS WHEREOF, the Issuer has caused this Security to be signed manually or by facsimile by its duly authorized officer under its corporate seal.

TETRAPHASE PHARMACEUTICALS, INC.

By: _____
Name: _____
Title: _____

Attest:

By: _____
Name: _____
Title: _____

This is one of the Securities of the series designated herein and referred to in the within-mentioned Indenture.

Dated: []

, as Trustee

By: _____
Title: _____

(REVERSE OF SECURITY)

TETRAPHASE PHARMACEUTICALS, INC.

[Title of Security]

1. Indenture

This Security is one of a duly authorized issue of debentures, notes or other evidence of indebtedness (hereinafter called the "Securities") of the Issuer of the series hereinafter specified, which series is initially limited in aggregate principal amount to [\$] , all of such Securities issued and to be issued under an Indenture dated as of , (the "Indenture") between the Issuer and as trustee (the "Trustee"). Capitalized terms herein are used as defined in the Indenture unless otherwise indicated. The terms of the Securities include those stated in the Indenture and those made part of the Indenture by reference to the Trust Indenture Act of 1939, as in effect on the date of the Indenture. The Securities are subject to all such terms, and Holders are referred to the Indenture and the Trust Indenture Act for a statement of all such terms. To the extent permitted by applicable law, in the event of any inconsistency between the terms of this Security and the terms of the Indenture, the terms of the Indenture shall control.

This Security is one of a series of Securities designated pursuant to the Indenture [and an [Supplemental Indenture] dated , , issued pursuant to Section 2.01 and Section 2.03 thereof (the "Supplement")] as . The Securities are general unsecured obligations of the Issuer. The Issuer may, subject to the provisions of the Indenture and applicable law, issue additional Securities of any series under the Indenture.

2. Method of Payment.

The Issuer shall pay interest on the Securities (except defaulted interest) to the persons who are the registered Holders at the close of business on the Interest Record Date immediately preceding the Interest Payment Date notwithstanding any transfer or exchange of such Security subsequent to such Interest Record Date and prior to such Interest Payment Date. Holders must surrender Securities to the Trustee to collect principal payments. The Issuer shall pay Principal and interest in money of [the United States] that at the time of payment is legal tender for payment of public and private debts. [However, the payments of interest, and any portion of the Principal (other than interest payable at maturity or on any redemption or repayment date or the final payment of Principal) shall be made by the Paying Agent, upon receipt from the Issuer of immediately available funds by [a./p.m.], New York City time (or such other time as may be agreed to between the Issuer and the Paying Agent or the Issuer), directly to a Holder (by Federal funds wire transfer or otherwise) if the Holder has delivered written instructions to the Trustee 15 days prior to such payment date requesting that such payment will be so made and designating the bank account to which such payments shall be so made and in the case of payments of Principal surrenders the same to the Trustee in exchange for a Security or Securities aggregating the same principal amount as the unredeemed principal amount of the Securities surrendered.]

3. Redemption.

[The Securities of this series may be redeemed at any time [on or after _____, _____], as a whole or in part, at the option of the Issuer, upon mailing notice of such redemption not less than 30 and not more than 60 days to the Holders of such Securities, at a redemption price equal to _____.]

4. Paying Agent and Security Registrar

Initially, the Trustee will act as Paying Agent and Security Registrar. The Issuer may change any Paying Agent or Security Registrar without notice to the Holders.

5. Denominations; Transfer; Exchange.

The Securities are in registered form, without coupons, in denominations of [\$1,000] and multiples of [\$1,000]. A Holder shall register the transfer of or exchange Securities in accordance with the Indenture. The Issuer may require a Holder, among other things, to furnish appropriate endorsements and transfer documents and to pay certain transfer taxes or similar governmental charges payable in connection therewith as permitted by the Indenture. *[The Issuer need not register the transfer of or exchange (a) any Securities for a period of fifteen (15) days preceding the first mailing of notice that such Securities are to be redeemed, or (b) any Securities selected, called or being called for redemption in whole or in part, except, in the case of any Security to be redeemed in part, the portion thereof not to be so redeemed.]*

6. Persons Deemed Owners.

The registered Holder of a Security shall be treated as the owner of it for all purposes.

7. Unclaimed Funds.

If funds for the payment of principal or interest remain unclaimed for two years, the Trustee and the Paying Agent will repay the funds to the Issuer. After that, all liability of the Trustee and such Paying Agent with respect to such funds shall cease.

8. Defeasance.

The Indenture *[as amended by the Supplement]* contains provisions for defeasance at any time of (a) the entire indebtedness of the Issuer on this Security and (b) certain restrictive covenants and the related Events of Default, upon compliance by the Issuer with certain conditions set forth therein, which provisions *[apply]* to this Security.

9. Amendment; Supplement; Waiver.

Subject to certain exceptions, the Securities of this series, *[the Supplement]* and the provisions of the Indenture relating to the Securities of this series may be amended or supplemented with the written consent of the Holders of at least a majority in aggregate principal amount of the Securities of this series then outstanding, and any existing Default or Event of Default, other than the non-payment of the principal amount of or interest on the Securities of

this series, or compliance with certain provisions may be waived with the consent of the Holders of a majority in aggregate principal amount of all the Securities of this series, then outstanding. Without notice to or consent of any Holder, the parties thereto may amend or supplement the Indenture and the Securities to, among other things, cure any ambiguity, defect or inconsistency, provide for uncertificated Securities in addition to or in place of certificated Securities, or make any other change that does not adversely affect the rights of any Holder of a Security.

10. Defaults and Remedies.

If an Event of Default (other than certain bankruptcy Events of Default with respect to the Issuer) occurs and is continuing, the Trustee or the Holders of at least 25% in aggregate principal amount of Securities of this series then outstanding (voting as a separate class) by notice in writing to the Issuer (and also to the Trustee if such notice is given by the Holders) may declare [*the entire principal*] of the Securities of this series and the interest accrued thereon, if any, to be due and payable immediately in the manner and with the effect provided in the Indenture. If a bankruptcy Event of Default with respect to the Issuer occurs and is continuing, then [*the entire principal*] of the Securities then outstanding and interest accrued thereon, if any, shall become due and payable immediately in the manner and with the effect provided in the Indenture. Holders of Securities may not enforce the Indenture or the Securities except as provided in the Indenture. The Trustee is not obligated to enforce the Indenture or the Securities unless it has received indemnity satisfactory to it. The Indenture permits, subject to certain limitations therein provided, Holders of a majority in aggregate principal amount of the Securities then outstanding to direct the Trustee in its exercise of any trust or power. The Trustee may withhold from Holders of Securities notice of certain continuing Defaults or Events of Default if it determines that withholding notice is in their interest.

11. Subordination.

Reference is made to the Indenture, including, without limitation, provisions subordinating the payment of principal of and premium, if any, and interest on the Securities to the prior payment in full of all Senior Indebtedness as defined in the Indenture. Such further provisions shall for all purposes have the same effect as though fully set forth at this place.

12. Trustee Dealings with Issuer.

The Trustee under the Indenture, in its individual or any other capacity, may become the owner or pledgee of Securities and may otherwise deal with the Issuer as if it were not the Trustee.

13. No Recourse Against Others.

No stockholder, director, officer, employee or incorporator, past, present or future as such, of the Issuer or any predecessor or successor corporation thereof shall have any liability for any obligation under the Securities or the Indenture or for any claim based on, in respect of or by reason of, such obligations or their creation. Each Holder of a Security by accepting a Security waives and releases all such liability. The waiver and release are part of the consideration for the issuance of the Securities.

14. Authentication.

This Security shall not be valid until the Trustee manually signs the certificate of authentication on this Security.

15. Abbreviations and Defined Terms.

Customary abbreviations may be used in the name of a Holder of a Security or an assignee, such as: TEN COM (= tenants in common), TEN ENT (= tenants by the entireties), JT TEN (= joint tenants with right of survivorship and not as tenants in common), CUST (= Custodian), and U/G/M/A (= Uniform Gifts to Minors Act).

16. CUSIP Numbers.

Pursuant to a recommendation promulgated by the Committee on Uniform Security Identification Procedures, the Issuer has caused CUSIP numbers to be printed on the Securities as a convenience to the Holders of the Securities. No representation is made as to the accuracy of such numbers as printed on the Securities and reliance may be placed only on the other identification numbers printed hereon.

17. Governing Law.

The laws of the State of New York shall govern the Indenture and this Security thereof, and for all purposes this Security shall be governed by and construed in accordance with the laws of such State without regard to any principle of conflict of laws that would require or permit the application of the laws of any other jurisdiction, except as may otherwise be required by mandatory provisions of law.

ASSIGNMENT FORM

I or we assign and transfer this Security to

(Print or type name, address and zip code of assignee or transferee)

(Insert Social Security or other identifying number of assignee or transferee)

and irrevocably appoint _____
agent to transfer this Security on the books of the Issuer. The agent may substitute another to act for him.

Dated: _____

Signed: _____
(Signed exactly as name appears on the other side of this Security)

Signature
Guarantee:

Participant in a recognized Signature Guarantee Medallion Program (or other signature guarantor program reasonably acceptable to the Trustee)

January 25, 2018

+1 617 526 6000 (t)
+1 617 526 5000 (f)
wilmerhale.comTetraphase Pharmaceuticals, Inc.
480 Arsenal Way
Watertown, Massachusetts 02472Registration Statement on Form S-3

Ladies and Gentlemen:

This opinion is furnished to you in connection with a Registration Statement on Form S-3 (the "Registration Statement") filed by Tetraphase Pharmaceuticals, Inc., a Delaware corporation (the "Company"), with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), for the registration of the following securities of the Company (the "Securities"):

1. senior debt securities (the "Senior Debt Securities");
2. subordinated debt securities (the "Subordinated Debt Securities" and, together with the Senior Debt Securities, the "Debt Securities");
3. common stock, par value \$0.001 per share (the "Common Stock");
4. preferred stock, par value \$0.001 per share (the "Preferred Stock"); and
5. warrants to purchase Debt Securities, Common Stock or Preferred Stock (the "Warrants");

all of which may be issued from time to time on a delayed or continuous basis pursuant to Rule 415 under the Securities Act at an aggregate initial offering price not to exceed \$150,00,000, as set forth in the Registration Statement, the prospectus contained therein (the "Prospectus") and any amendments or supplements thereto.

We are acting as counsel for the Company in connection with the filing of the Registration Statement. The Senior Debt Securities may be issued pursuant to a senior indenture (the "Senior Indenture") to be entered into between the Company and a trustee to be named in the Senior Indenture and duly qualified under the Trust Indenture Act of 1939, as amended (the "Trust Indenture Act"). The Subordinated Debt Securities may be issued pursuant to a subordinated indenture (the "Subordinated Indenture," and together with the Senior Indenture and any supplemental indentures relating to Debt Securities to be issued under the Senior Indenture or the Subordinated Indenture, the "Indentures") to be entered into between the Company and a trustee to be named in the Subordinated Indenture and duly qualified under the Trust Indenture Act. The preferences, limitations and relative rights of shares of any series of Preferred Stock will be set forth in a Certificate of Designation (a "Certificate of Designation") with respect thereto. The Warrants may be issued pursuant to a warrant agreement (the "Warrant Agreement") between the Company and a bank or trust company as warrant agent.

We have examined and relied upon signed copies of the Registration Statement as filed with the Commission, including the exhibits thereto. We have also examined and relied upon the Certificate of Incorporation of the Company (as amended or restated from time to time, the "Certificate of Incorporation"), the Bylaws of the Company

Wilmer Cutler Pickering Hale and Dorr LLP, 60 State Street, Boston, Massachusetts 02109

Beijing Berlin Boston Brussels Denver Frankfurt London Los Angeles New York Oxford Palo Alto Washington

(as amended or restated from time to time, the “Bylaws”) and minutes of meetings of the stockholders and the Board of Directors of the Company as provided to us by the Company.

In our examination of the foregoing documents, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as copies, the authenticity of the originals of such latter documents and the legal capacity of all signatories to such documents.

We have relied as to certain matters on information obtained from public officials and officers of the Company, and we have assumed that (i) one or more prospectus supplements will have been prepared and filed with the Commission describing the Securities offered thereby; (ii) all Securities will be issued and sold in compliance with applicable federal and state securities laws and in the manner stated in the Registration Statement, the Prospectus and the applicable prospectus supplement; (iii) in the case of Debt Securities, (a) the applicable Indenture will be duly authorized, executed and delivered by the trustee named therein, (b) the applicable Indenture will be duly qualified under the Trust Indenture Act, and the applicable trustee will be duly eligible to serve as trustee and (c) the Debt Securities will be duly authenticated by the trustee named in the applicable Indenture, (iv) any Warrant Agreement will be duly authorized, executed and delivered by all parties thereto other than the Company; (v) a definitive purchase, underwriting or similar agreement with respect to any Securities offered will be duly authorized, executed and delivered by all parties thereto other than the Company; (vi) any Securities issuable upon conversion, exchange or exercise of any Security being offered will be duly authorized, created and, if appropriate, reserved for issuance upon such conversion, exchange or exercise; (vii) with respect to shares of Common Stock or Preferred Stock offered, there will be sufficient shares of Common Stock or Preferred Stock authorized under the Certificate of Incorporation and not otherwise reserved for issuance; and (viii) the Company will be validly existing as a corporation and in good standing under the laws of the State of Delaware.

We are expressing no opinion herein as to the application of any federal or state law or regulation to the power, authority or competence of any party to any agreement with respect to any of the Securities other than the Company. We have assumed that such agreements are, or will be, the valid and binding obligations of each party thereto other than the Company, and enforceable against each such other party in accordance with their respective terms.

We have assumed for purposes of our opinions below that no authorization, approval or other action by, and no notice to or filing with, any governmental authority or regulatory body or any other third party is required for the due execution, delivery or performance by the Company or, if any such authorization, approval, consent, action, notice or filing is required, it will have been duly obtained, taken, given or made and will be in full force and effect. We have also assumed that the execution and delivery by the Company of the Indentures and the Warrant Agreement and the Securities and the performance by the Company of its obligations thereunder do not and will not violate, conflict with or constitute a default under (i) any agreement or instrument to which the Company or any of its properties is then subject, (ii) any law, rule, or regulation to which the Company or any of its properties is then subject or (iii) any judicial or regulatory order or decree of any governmental authority.

We have also assumed that there will not have occurred, prior to the date of issuance of the Securities, any change in law affecting the validity or enforceability of such Securities and that at the time of the issuance and sale of the Securities, the Board of Directors of the Company (or any committee thereof acting pursuant to authority properly delegated to such committee by the Board of Directors) shall not have taken any action to rescind or otherwise reduce its prior authorization of the issuance of the Securities.

Our opinions below are qualified to the extent that they may be subject to or affected by (i) applicable bankruptcy, insolvency, reorganization, moratorium, usury, fraudulent conveyance or similar laws relating to or affecting the rights or remedies of creditors generally, (ii) duties and standards imposed on creditors and parties to contracts, including, without limitation, requirements of materiality, good faith, reasonableness and fair dealing and (iii) general equitable principles. Furthermore, we express no opinion as to the availability of any equitable or specific remedy upon any breach of any of the agreements as to which we are opining herein, or any of the

agreements, documents or obligations referred to therein, or to the successful assertion of any equitable defenses, inasmuch as the availability of such remedies or the success of any equitable defenses may be subject to the discretion of a court. We express no opinion herein as to the laws of any state or jurisdiction other than the state laws of the State of New York, the General Corporation Law of the State of Delaware and the federal laws of the United States of America. We also express no opinion herein with respect to compliance by the Company with the securities or “blue sky” laws of any state or other jurisdiction of the United States or of any foreign jurisdiction. In addition, we express no opinion and make no statement herein with respect to the antifraud or antitrust or unfair competition laws of any jurisdiction.

We also express no opinion herein as to any provision of any agreement (i) that may be deemed to or construed to waive any right of the Company, (ii) to the effect that rights and remedies are not exclusive, that every right or remedy is cumulative and may be exercised in addition to or with any other right or remedy and does not preclude recourse to one or more other rights or remedies, (iii) relating to the effect of invalidity or unenforceability of any provision of any agreement on the validity or enforceability of any other provision thereof, (iv) that is in violation of public policy, (v) relating to indemnification and contribution with respect to securities law matters, (vi) which provides that the terms of any agreement may not be waived or modified except in writing, (vii) purporting to indemnify any person against his, her or its own negligence or intentional misconduct, (viii) requiring the payment of penalties, consequential damages or liquidated damages or (ix) relating to choice of law or consent to jurisdiction.

Based upon and subject to the foregoing, we are of the opinion that:

1. With respect to the Debt Securities, when (i) specifically authorized for issuance by proper action of the Board of Directors of the Company or an authorized committee thereof (the “Authorizing Resolutions”), (ii) the applicable Indenture has been duly authorized, executed and delivered, (iii) the terms of the Debt Securities and of their issuance and sale have been duly established in conformity with the applicable Indenture and the Authorizing Resolutions, (iv) such Debt Securities have been duly executed and authenticated in accordance with the applicable Indenture and issued and sold as contemplated by the Registration Statement, the Prospectus and the applicable prospectus supplement and (v) the Company has received the consideration provided for in the Authorizing Resolutions, such Debt Securities will constitute valid and binding obligations of the Company enforceable against the Company in accordance with their terms.
2. With respect to the Common Stock, when (i) specifically authorized for issuance by the Authorizing Resolutions, (ii) the terms of the issuance and sale of the Common Stock have been duly established in conformity with the Certificate of Incorporation and Bylaws, (iii) the shares of Common Stock have been issued and sold as contemplated by the Registration Statement, the Prospectus and the applicable prospectus supplement and (iv) the Company has received the consideration provided for in the Authorizing Resolutions and the applicable underwriting or other purchase agreement and such consideration per share is not less than the par value per share of the Common Stock, the Common Stock will be validly issued, fully paid and nonassessable.
3. With respect to shares of any series of the Preferred Stock, when (i) the Authorizing Resolutions have specifically authorized the issuance and terms of the shares of the series, the terms of the offering thereof and related matters, including resolutions establishing and designating the series and fixing and determining the preferences, limitations and relative rights thereof and the filing of a Certificate of Designation with respect to the series with the Secretary of State of the State of Delaware, and such Certificate of Designation has been duly filed, (ii) the terms of the issuance and sale of the series of Preferred Stock have been duly established in conformity with the Certificate of Incorporation and Bylaws, (iii) the shares of the series of Preferred Stock have been issued and sold as contemplated by the Registration Statement, the Prospectus and the applicable prospectus supplement and (iv) the Company has received the consideration provided for in the Authorizing Resolutions and the applicable underwriting or other purchase agreement and such consideration per share is not less than the par value per share of the Preferred Stock, the shares of such series of Preferred Stock will be validly issued, fully paid and nonassessable.

4. With respect to the Warrants, when (i) specifically authorized for issuance by the Authorizing Resolutions, (ii) the applicable Warrant Agreement relating to the Warrants has been duly authorized, executed and delivered, (iii) the terms of the Warrants and of their issuance and sale have been duly established in conformity with the applicable Warrant Agreement and the Authorizing Resolutions, (iv) the Warrants have been duly executed and countersigned in accordance with the applicable Warrant Agreement and issued and sold as contemplated by the Registration Statement, the Prospectus and the applicable prospectus supplement and (v) the Company has received the consideration provided for in the Authorizing Resolutions and the applicable underwriting or other purchase agreement, such Warrants will constitute valid and binding obligations of the Company enforceable against the Company in accordance with their terms.

It is understood that this opinion is to be used only in connection with the offer and sale of the Securities while the Registration Statement is in effect.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act and to the use of our name therein and in the related Prospectus and in any prospectus supplement under the caption "Legal Matters." In giving such consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

WILMER CUTLER PICKERING
HALE AND DORR LLP

By: /s/ Stuart M. Falber
Stuart M. Falber, a Partner

CONSOLIDATED RATIOS OF EARNINGS TO FIXED CHARGES

The following table sets forth, for each of the periods presented, our ratio of earnings to fixed charges and the related coverage deficiency. You should read this table in conjunction with the financial statements and notes incorporated by reference in this prospectus.

(In thousands)	Nine Months Ended September 30, 2017	Years Ended December 31,				
		2016	2015	2014	2013	2012
Net loss	\$ (91,276)	\$(77,480)	\$(83,189)	\$(66,742)	\$(29,636)	\$(15,087)
Ratio of earnings to fixed charges(1), (2)	N/A	N/A	N/A	N/A	N/A	N/A
Coverage deficiency	\$ (91,276)	\$(77,480)	\$(83,189)	\$(66,742)	\$(29,636)	\$(15,087)

- (1) For purposes of calculating the ratio of earnings to fixed charges, earnings consist of net income (loss) from continuing operations before income taxes, plus fixed charges. Fixed charges include interest expense and the estimated interest component of rental expense.
- (2) We did not record earnings for the nine months ended September 30, 2017 or for the years ended December 31, 2016, 2015, 2014, 2013 and 2012. Accordingly, our earnings were insufficient to cover fixed charges for such periods and we are unable to disclose a ratio of earnings to fixed charges for such periods.

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption “Experts” in this Registration Statement (Form S-3) and related Prospectus of Tetrphase Pharmaceuticals, Inc. for the registration of debt securities, common stock, preferred stock, and warrants and to the incorporation by reference therein of our reports dated March 13, 2017, with respect to the consolidated financial statements of Tetrphase Pharmaceuticals, Inc., and the effectiveness of internal control over financial reporting of Tetrphase Pharmaceuticals, Inc., included in its Annual Report (Form 10-K) for the year ended December 31, 2016, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Boston, Massachusetts
January 25, 2018